Muskegon Public Schools

Stormwater Management Program Plan

Municipal Separate Storm Sewer System National Pollutant Discharge Elimination System Permit

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Table of Contents

Appendices

Appendix "A"	Outfall/Discharge Point Receiving Water Table & Site Stormwater Structure Maps
Appendix "B"	MAISD School Board Policy Resolution, Post Construction Stormwater Runoff Program Policy and Procedures & Municipal Separate Storm Sewer System Noncompliance Enforcement Tracking Sheet
Appendix "C"	SEMCOG Posters
Appendix "D"	Inspection Field Worksheets & Stormwater Sampling and Analysis Protocol for School District MS4 Clients (SOP-101)
Appendix "E"	Illicit Discharge Illegal Spill Reporting Form

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Stormwater Management Program Plan

1.0 Introduction

This Stormwater Management Plan (SWMP) has been developed, to reduce the discharge of pollutants from the MS4 to the Maximum Extent Practicable and protect water quality in accordance with the appropriate water quality requirements of Michigan Act 451, Public Acts of 1994, Part 31, and the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et seq.) The District will implement and enforce this SWMP to the Maximum Extent Practicable. In order to retain the authorization to discharge, The District is required to submit this plan with the "NPDES Application for Discharge of Stormwater to Surface Waters from a Municipal Separate Storm Sewer System (MS4)".

This Stormwater Management Plan commits to actions throughout the permit cycle. This SWMP includes measurable goals for Best Management Practices (BMP), focusing on the six minimum measures. Measurable goals describe the actions The District will take to implement each BMP and allow The District to evaluate progress toward meeting key objectives outlined in the following sections.

The school district owns and operates twelve (12) public facilities within the boundaries of the "Muskegon Urbanized Area" eligible for permit coverage. The District properties are within the urbanized area based off of the 2010 Census data, and the facilities include:

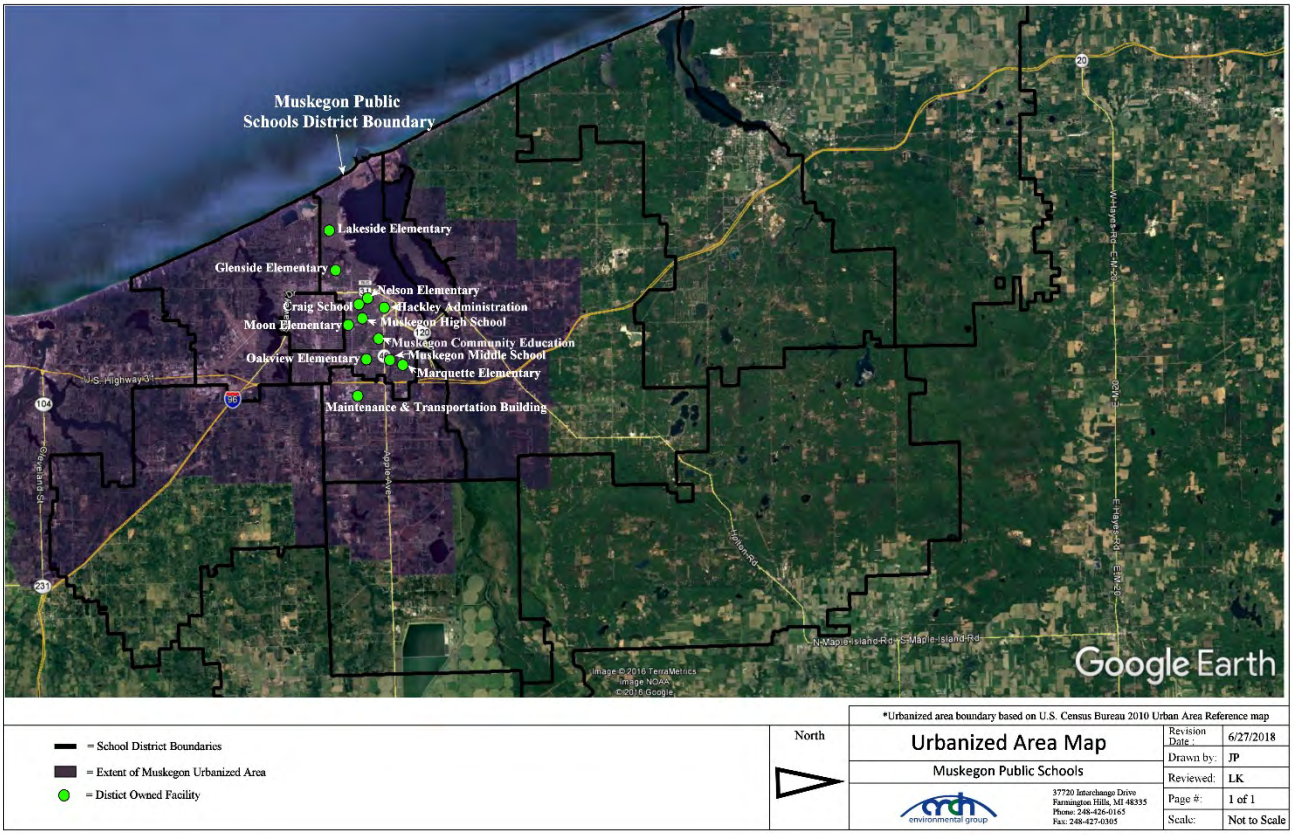
1. Craig School (Closed Facility)
2. Glenside Elementary School
3. Hackley Elementary School
4. Lakeside Elementary School
5. Maintenance & Transportation Facility (District Service Building)
6. Marquette Elementary School
7. Moon Elementary School
8. Muskegon Community Education
9. Muskegon High School
10. Muskegon Middle School
11. Nelson Elementary School
12. Oakview Elementary School

Site-specific storm sewer system maps for the above facilities can be found in Appendix A.

1.1 Regulated Area

A map identifying the urbanized areas within The District as defined by the 2010 Census is provided below in Map 1.

Map 1 – District Jurisdictional Boundary Map – Urbanized Area[1]



1.2 Outfalls & Discharge Points/ Receiving Waters

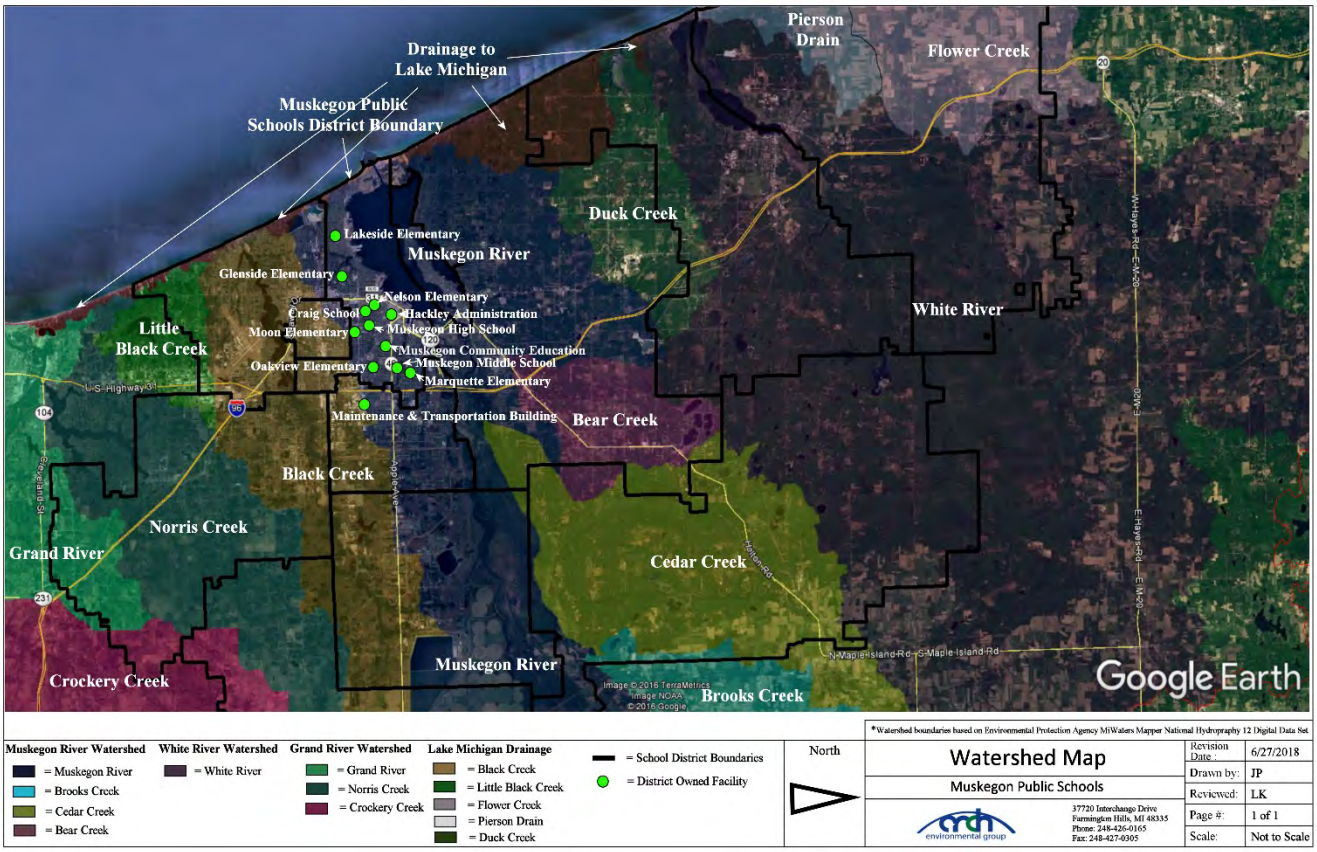
The permit authorizes the discharge of stormwater from municipal separate stormwater drainage systems to waters of the state from all existing outfalls or points of discharge.

The District has identified outfalls that discharge directly into surface waters of the state and discharge points that discharge into other MS4 drainage systems. The District's drainage system discharges directly or indirectly into the Muskegon River Watershed as detailed in Map 2 below.

The District has completed site specific storm sewer system maps which identify outfall and discharge point locations, discharge point source identification numbers, and receiving waters. A receiving water table and site-specific storm sewer system maps are provided in Appendix "A". Any changes to The District's storm sewer system will be reflected on the storm sewer system maps and provided to the MDEQ during progress reporting. The District falls within the Muskegon River Watershed. The District watershed boundary map is provided below in the map listed as "Map 2".

[1] Urbanized area boundary based on U.S. Census Bureau 2010 Urban Area Reference Maps.

Map 2 – District Watershed Map[2]



1.3 Enforcement Response Procedures

Muskegon Public Schools is committed to practicing sound stormwater management practices; including observance and adherence to all local, state, and federal stormwater statutes, rules, and regulations. Enforcement of the policies, procedures, and best management practices (BMPs) outlined in this SWMP is the responsibility of the district Superintendent or their designee. Muskegon Public Schools has developed and passed a School Board Resolution requiring the district comply with the requirements of the Michigan National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit and District SWMP. Any questions regarding this policy and procedure should be directed to the Stormwater Manager.

The primary role of the Superintendent or their designee is to ensure that the ERP is followed in a timely and consistent manner and track compliance issues and schedules. To achieve compliance, the following steps may be conducted:

1. Reviews reported violation.
2. Contact business or non-district individual responsible for the violation.
3. Ensures that compliance actions taken are consistent and timely.

[2] Watershed boundaries based on Environmental Protection Agency MiWaters Mapper National Hydrography Dataset Mapper 12-Digit Watersheds.

4. Tracks instances of noncompliance.
5. Reviews compliance reports and schedules to ensure that appropriate enforcement actions are taken, and compliance goals are met.
6. Conduct follow-up inspection(s) to verify the violation has been corrected.
7. Legal action may be pursued for the most serious violations including where the response to previous enforcement actions is inadequate.

The tracking of instances of noncompliance includes the following information:

- Name
- Date
- Location of Violation (address, cross streets, etc.,)
- Business/Agency/Organization (as appropriate)
- Description of Violation
- Description of Enforcement Response
- Date Violation was Resolved

Information shall be placed into the Districts Noncompliance Enforcement Tracking Sheet.

This procedure will be reviewed on an annual basis by the Stormwater Manager for any updates. A copy of the approved resolution is included with an example of the Municipal Separate Storm Sewer System Noncompliance Enforcement Tracking Sheet in Appendix "B".

2.0 Stormwater Management Program Plan (SWMP) Minimum Control Measures

This SWMP has been developed to describe the Best Management Practices (BMPs) The District will implement to meet the six minimum control measures and water quality requirements. The six minimum control measures include:

- **Public Participation/Involvement Program (PPP)**
- **Public Education Program (PEP)**
- **Illicit Discharge Elimination Program (IDEP)**
- **Construction Stormwater Runoff Control Program**
- **Post Construction Stormwater Runoff Program**
- **Pollution Prevention/Good Housekeeping Program**

Each BMP includes a measurable goal, implementation schedule, and measure of assessment.

2.1 Public Involvement/Participation Program (PPP)

Engaging and empowering the public in the effort to reduce the impacts of stormwater runoff is a key element of the public involvement/participation program.

2.1.1 Public Involvement/Participation Program Objectives

1. Process for making the Stormwater Management Plan available for public inspection and comment.
2. Process for inviting public involvement and participation in the implementation of SWMP best management practices and periodic review of the SWMP.

2.1.2 Public Involvement& Participation Procedure

1. The SWMP will be posted on The District webpage for review and comment by the public when the application is submitted to the MDEQ. The stormwater webpages will include the contact information to forward comments.
2. The public will be notified through announcements or newsletters that a copy of the SWMP is available on The District stormwater webpage.
3. A public survey will be developed and placed on The District stormwater webpage in an effort to provide input into stormwater implementation.
4. A link to a stormwater blog "Cleanwater Chronicles" will be added to The District stormwater webpage. The stormwater blog explains water quality issues and promotes opportunities for public involvement.
5. Cooperation with local watershed protection groups.

2.1.3 Public Involvement& Participation Assessment

1. The District will review the public involvement & participation BMPs as part of annual SWMP review to determine level of district involvement and identify areas of improvement.

2.1.4 Public Involvement & Participation Program (PPP) BMP Table

BMP	Implementation of BMP	Timeframe	Measurable Goal	Measure of Assessment	Responsible Party
BMP #2.1.4.1 Public Notice of SWMP	Make SWMP available for public review through stormwater webpage.	Annually Throughout Permit Cycle	Public notice published in annual district wide newsletter announcing the availability of the SWMP for review, including contact information for comments.	Verify SWMP available on stormwater webpage, and track changes webpage posting of SWMP.	The District
	Notification in annual district newsletter to publicize updated SWMP and locations for review.			Keep copies of official SWMP posting notifications.	
	Contact information will be available on the stormwater webpages to forward comments regarding the SWMP.			Compile and track comments from the public.	
BMP #2.1.4.2 Stormwater Blog	Post link to stormwater blog on district website.	Ongoing Throughout Permit Cycle	A link to a stormwater blog established and maintained on The District stormwater webpage to assist in distributing information and updating the public on the watershed and activities.	Copies of monthly stormwater blog postings for reporting period.	The District
BMP #2.1.4.3 Stormwater Education Program Survey	Post survey on district website.	Ongoing Throughout Permit Cycle	Survey posted on the stormwater webpages and link maintained throughout the permit term to assess community knowledge and provide input into stormwater implementation.	Results of completed surveys.	The District
BMP #2.1.4.4 Participation Activities	Engage in environmental education activities.	Ongoing Throughout Permit Cycle	Increase in public participation in environmental activities and outreach events. Participation activities include water quality issues, stormwater management initiatives, home toxics, recycling, compost and disposal.	Reports of participation.	The District

BMP	Implementation of BMP	Timeframe	Measurable Goal	Measure of Assessment	Responsible Party
BMP #2.1.4.5 Public Involvement & Participation Program Assessment	Evaluate the effectiveness of the public involvement program.	Annually Throughout Permit Cycle	Complete as part of annual SWMP review to determine level of district involvement and identify areas of improvement. Program activities may be adjusted based on the results of the assessment.	Copies of annual SWMP review noting any areas of needed improvement.	The District

2.2 Public Education Program (PEP)

The District's "Public Education Program (PEP)" is designed to promote, publicize, and facilitate education for the purpose of encouraging the public to reduce the discharge of pollutants into The District's separate storm sewer system.

The term "Public" as referred to in this program is defined to include all persons who could potentially affect the quality of stormwater discharges from The District properties including but not limited to the faculty, staff, contractors, and students of The District, as well as area residents, visitors, public employees, local businesses, industries, construction contractors and property developers. This PEP will include a variety of mechanisms and venues to provide watershed awareness and pollution prevention education throughout The District jurisdiction.

2.2.1 Public Education Program Objectives

1. Responsibility and stewardship in their watershed.
2. Inform and educate the public about the connection of the MS4 to area waterbodies and the potential impacts discharges could have on surface waters of the state.
3. Educate the public on illicit discharges and promote public reporting of illicit discharges and improper disposal of materials into the MS4.
4. Promote preferred cleaning materials and procedures for car, pavement, and power washing.
5. Inform and educate the public on the proper application and disposal of pesticides, herbicides, and fertilizers.
6. Promote proper disposal practices for grass clippings, leaf litter, and animal wastes that may enter the MS4.
7. Identify and promote the availability, location, and requirements of facilities for collection or disposal of household hazardous wastes, travel trailer sanitary wastes, chemicals, yard wastes, and motor vehicle fluids.
8. Inform and educate the public on proper septic system care and maintenance, and how to recognize system failure.
9. Promote methods for managing riparian lands to protect water quality.
10. Identify and educate commercial, industrial, and institutional facilities about good housekeeping.
11. Provide training for staff.

2.2.2 Public Education Program Procedure

The District is targeting all community wide issues as high priority. No prioritization will be needed, as educational activities ensure that all community wide issues reach the public. It is anticipated that during the course of this permit a combination of educational approaches will be used to convey the individual components of the PEP. Educational mechanisms will include tracking of watershed specific education topics in various science curriculums, cooperation with the distribution or posting of community newsletters and other watershed partner literature, and event notices. The District will develop and implement a comprehensive "Stormwater Management" webpage on The Districts website. Additionally, program posters will be strategically placed throughout school facilities. Copies of SEMCOG posters are provided in Appendix "C".

2.2.3 Public Education Program BMP Table

BMP Topic	Description of BMP	Timeframe	Measurable Goal & Key Messages	Measure of Assessment	Target Audience	Responsible Party
BMP #2.2.3.1 Promote public responsibility and stewardship in watershed.	Watershed website. Watershed specific website hosted by district; featuring watershed map, description of watershed, and links to watershed groups.	Ongoing Throughout Permit Cycle	Supply watershed information and promote watershed membership information. Educate the public on local water body health.	Update webpages as necessary. Confirm posting & track webpage reviews. Provide watershed membership information.	Students, faculty and community	The District
	Place SEMCOG "7 Simple Steps to Clean Water" information on stormwater webpages.		SEMCOG "7 Simple Steps to Clean Water" information and links.	Update webpages as necessary. Confirm posting & track webpage reviews.		
	Review K-12 Science Curriculum to highlight items applicable to this program plan.	Curriculum Annually Throughout Permit Cycle	Review and update curriculum table, detailing number of students/grades level participating within each identified curriculum topic.	Updated curriculum table.	Faculty & students	
			Communicate with faculty regarding the resources available to reach the student audience.	Documentation of communication with faculty.		
	Publicize environmental related events through email, newsletters or social media.	Ongoing Throughout Permit Cycle	Promote public awareness on environmental issues and increase district environmental participation.	Date, time location and name of event attended.	Students, faculty and community	
				Maintain copies of email notices (watershed announcement) of educational materials provided to district staff.		

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BMP Topic	Description of BMP	Timeframe	Measurable Goal & Key Messages	Measure of Assessment	Target Audience	Responsible Party
BMP #2.2.3.2 Educate the public about the connection of the MS4 to the area waterbodies and the potential impacts discharges could have on surface waters of the state.	Posting of the training video "When it Rains, it Drains…The Stormwater Question" on The District webpage.	Ongoing Throughout Permit Cycle	Educate the public on local water bodies, water quality issues, and impacts of discharges on surface waters through visual media.	Update webpages as necessary. Confirm posting & track webpage reviews.	Students, faculty and community	The District
	Include information and links to USEPA and MDEQ Stormwater information on district stormwater webpage.		Provide resources to water quality issues and impacts of discharges on surface waters.	Update webpages as necessary. Confirm posting of links & track webpage reviews.		
	SEMCOG posters placed strategically throughout The District.		Maintain three (3) various SEMCOG posters at each facility. Strategic locations include Main Office, Lounge, and Receiving Area (if available).	Annual review of postings. Number of posters placed throughout district.		
	General Stormwater Awareness Training **(Level I Training further described in Sec. 3.0 of this SWMP)**	Once per permit cycle or during the 1st year of employment Throughout Permit Cycle	Provide training to teachers, administrative and support staff not conducting level II, Illicit discharge/pollution prevention training.	Copy of sign in sheets and Agenda (if available).	Faculty	
		Ongoing Throughout Permit Cycle	Post stormwater training video on stormwater webpage.	Update webpages as necessary. Confirm posting & track webpage reviews.	Students, faculty and community	

BMP Topic	Description of BMP	Timeframe	Measurable Goal & Key Messages	Measure of Assessment	Target Audience	Responsible Party
BMP #2.2.3.3 Educate the Public on Illicit Discharges and promote public reporting of illicit discharges and improper disposal of materials into the MS4.	Pollutants & Illicit Discharges webpage; featuring information regarding sources of pollution, how pollutants cause damage, illicit discharges. How to Report/Hotline Numbers poster; describing illicit discharges and how to report illicit discharges.	Ongoing Throughout Permit Cycle	Place "How to spot illicit discharge/ How to Report-Hotline Numbers" posters placed in Receiving Rooms at each district facility. Goal is to have one poster at each facility. Maintain illicit discharge webpage.	Annual review of postings. Number of posters placed throughout district Update webpages as necessary. Confirm posting & track webpage reviews.	Students, faculty and community	The District
			Maintain illicit discharge webpage.	Update webpages as necessary. Confirm posting & track webpage reviews.		
	SEMCOG posters placed strategically throughout The District.		Goal to maintain three (3) various SEMCOG posters at each facility. Strategic locations include Main Office, Lounge, and Receiving Area (if available).	Annual review of postings. Number of posters placed throughout district.		
	The District implements an active storm drain labeling/ marking program.	Update as needed Throughout Permit Cycle	Visually making a connection of storm drains to local waterways and the impacts of dumping pollutants into these drains, increase number of staff, students and visitors who can identify the connection. Mark all drains on pervious surfaces.	Annual inventory of stenciled basins.		

BMP Topic	Description of BMP	Timeframe	Measurable Goal & Key Messages	Measure of Assessment	Target Audience	Responsible Party
BMP #2.2.3.4 Promote preferred cleaning materials and procedures for car, pavement, and power washing.	SEMCOG posters placed strategically throughout The District.	Ongoing Throughout Permit Cycle	Goal to maintain three (3) various SEMCOG posters at each facility. Strategic locations include Main Office, Lounge, and Receiving Area (if available).	Annual review of postings. Number of posters placed throughout district.	Students, faculty and community	The District
	Discontinue practice of allowing school or other private groups from holding car wash fund raising project on school property.	Annually Throughout Permit Cycle	Send notice to all school principals and athletic staff informing them of the new policy.	Copy of annual notice.	Faculty & students	
BMP #2.2.3.5 Inform and educate the public on proper application and disposal of pesticides, herbicides, and fertilizers.	Maintain a district "Good Housekeeping" informational page on stormwater management webpages.	Ongoing Throughout Permit Cycle	Address the environmental consequences (including water quality) resulting from improper handling and disposal of pesticides, herbicides, and fertilizers.	Update webpages as necessary. Confirm posting & track webpage reviews.	Students, faculty and community	The District
	SEMCOG posters placed strategically throughout The District.		Goal to maintain three (3) various SEMCOG posters at each facility. Strategic locations include Main Office, Lounge, and Receiving Area (if available).	Annual review of postings. Number of posters placed throughout district.		
BMP #2.2.3.6 Promote proper disposal practices for grass clippings, leaf litter, and animal wastes that may enter into the MS4.	SEMCOG posters placed strategically throughout The District.	Ongoing Throughout Permit Cycle	Goal to maintain three (3) various SEMCOG posters at each facility. Strategic locations include Main Office, Lounge, and Receiving Area (if available).	Annual review of postings. Number of posters placed throughout district.	Students, faculty and community	The District

BMP Topic	Description of BMP	Timeframe	Measurable Goal & Key Messages	Measure of Assessment	Target Audience	Responsible Party
BMP #2.2.3.7 Identify and promote the availability, location and requirements of facilities for collection and disposal of household hazardous wastes, travel trailer wastes, chemicals, and motor vehicle fluids.	Maintain a district "Household Hazardous Waste" informational page on stormwater management webpages.	Ongoing Throughout Permit Cycle	Address the environmental (including water quality) and public health effects resulting from improper handling and disposal of household hazardous waste, reduce the use of home toxics, keep citizens informed about the choices and responsibilities associated with purchasing, handling and disposing of toxic substances. Increase the number of residents using the program to dispose of home toxics.	Update webpages as necessary. Confirm posting & track webpage reviews.	Students, faculty and community	The District
BMP #2.2.3.8 Inform and educate the public on proper septic system care and maintenance, and how to recognize system failure.	Maintain a district "Sewer Overflows and Septic Systems" informational page on stormwater management webpages.	Ongoing Throughout Permit Cycle	Educate why sewer overflows and septic systems are pollution issues. Promote proper and consistent maintenance of septic systems.	Update webpages as necessary. Confirm posting & track webpage reviews.	Students, faculty and community	The District

BMP Topic	Description of BMP	Timeframe	Measurable Goal & Key Messages	Measure of Assessment	Target Audience	Responsible Party
BMP #2.2.3.9 Promote methods for managing riparian lands to protect water quality.	Maintain a district "Riparian Zone Management" informational page on stormwater management webpages.	Ongoing Throughout Permit Cycle	Educate on why riparian zones are important, what riparian zona management is (river friendly lawn care, riparian buffer zones, stream bank stabilization, woody debris management, river maintenance). Increase number of riparian landowners who implement BMPs	Update webpages as necessary. Confirm posting & track webpage reviews.	Students, faculty and community	The District
	Encourage teachers and students to participate in stream bank monitoring programs.		Increase awareness, inspire people to take actions that lead to better river protection at home and in their communities.	Report on schools that participated in monitoring programs.	Students and faculty	
	Include guidance and links on Stormwater webpage on native vegetation.	Ongoing Throughout Permit Cycle	Maintain a district "Native, Non-Native, & Invasive Species" and "Why Use Native Plants?" informational page on stormwater management webpages. Increase the use of native plants and encourage the use of gardens at school facilities.	Update webpages as necessary. Confirm posting & track webpage reviews.	Students, faculty and community	The District
BMP #2.2.3.10 Identify and educate commercial, industrial and institutional entities likely to contribute pollutants to stormwater runoff.	Require contractors or vendors whose activities have potential to impact water quality to train applicable staff and follow the requirements of the SWMP. Direct contractors to online training. **[All Stormwater Training is outlined in Section 3.0 Training].**	Ongoing Throughout Permit Cycle	Contractors training and informed of pollution prevention and good housekeeping techniques.	Copy of sign in sheets, pre-project meeting notes or inspections.	Contractors & vendors	The District & Contractors/ Vendors

BMP Topic	Description of BMP	Timeframe	Measurable Goal & Key Messages	Measure of Assessment	Target Audience	Responsible Party
BMP #2.2.3.11 Stormwater Education Program Effectiveness Survey	Post survey on district website	Annually Throughout Permit Cycle	A survey has been posted on the stormwater webpages and will be posted throughout the permit term to ascertain behavioral changes.	Annual results of survey.	Students, faculty and community	The District
BMP #2.2.3.12 Public Education Program Assessment	Summary of annual public education activities for the "Public Education" component to evaluate the effectiveness.	Annually Throughout Permit Cycle	Determine if the public education best management practices have been implemented and identify areas of improvement.	Annual SWMP review. Summary of public education activities. Survey results review.	Students, faculty and community	The District

2.2.4 Curriculum

The District will conduct a review of the current State of Michigan K-12 science curriculum to determine which topics and grade levels have applicability toward the goals of the SWMP. The District's K-12 science curriculum has been developed as required under Michigan Department of Education "Grade Level Content Expectations". The District encourages schools to incorporate watershed awareness, pollution prevention, recycling, ecology, and energy conservation into the core curriculum throughout The District.

The current K-12th grade Earth Science curriculum provides students with a wide range of topics specifically related to this permit. A listing of current elementary and above (K-12) grade level curriculum topics including grade level, curriculum code, description, and any additional activities included in the specific course work is provided in the table below.

Stormwater Program Related Science Curriculum K-12th Grade

Grade	Code	Description
K	K-ESS3-3	Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.
2	2-ESS1-1	Use information from several sources to provide evidence that Earth events can occur quickly or slowly
2	2-ESS2-2	Develop a model to represent the shapes and kinds of land and bodies of water in an area.
2	2-ESS2-3	Obtain information to identify where water is found on Earth and that it can be solid or liquid.
4	4-ESS2-1	Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation
5	5-ESS2-2	Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.
5	5-ESS3-1	Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.
6-8	MS-ESS2-4	Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.
6-8	MS-ESS3-1	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.

6-8	MS-ESS3-3	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
6-8	MS-ESS3-4	Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.
9-12	HS-ESS2-5	Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.
9-12	HS-ESS3-1	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity
9-12	HS-ESS3-6	Use a computational representation to illustrate the relationships amongEarth systems and how those relationships are being modified due tohuman activity.

2.2.5 Public Education Program Effectiveness

The effectiveness of the public education program will be evaluated based on progress made towards meeting the BMP objectives described above.

The District has implemented a "Watershed Awareness Survey" to be used as an evaluation. Muskegon Public Schools will implement this survey during the 2016/17 fiscal year. The purpose of these surveys is to provide an assessment of public understanding of issues in the watershed related to pollution from stormwater runoff. Results would be used to guide Muskegon Public Schools in identifying opportunities for enhancement of the PEP. Additionally, Muskegon Public Schools will conduct an annual review of the public education best management practices to determine if they have been implemented and identify areas of improvement.

2.3 Illicit Discharge Elimination Program (IDEP)

The following Illicit Discharge Elimination Program is designed to identify, locate, prohibit, and effectively eliminate illicit discharges in The District including discharges of sanitary wastewaters to the permitted separate stormwater drainage systems.

2.3.1 Illicit Discharge Elimination Program (IDEP) Program Objectives

1. Establish authority to investigate, inspect and monitor suspected illicit discharges.
2. Maintain maps of the MS4, points of discharge, and outfalls.
3. Prohibit non-stormwater discharge into the MS4.
4. Provide regular training to staff.
5. Instruct contractors to prevent dumping into the MS4.

6. Conduct routine dry weather screening.
7. Conduct source investigations if the source of an illicit discharge/connection is not identified by field screening.
8. Illicit discharge identification and elimination program performance & effectiveness.

2.3.2 Facility Site Storm Sewer System Maps and Lists

The District and consultants completed storm sewer system mapping at each of the owner operated properties identified in Section 1.0 of this Stormwater Management Plan. Storm sewer system maps include detailed information of the storm sewer system, including the locations of outfalls, points of discharge, and waters of the State that receive the discharges. The maps include a unique identification number for each storm sewer location identified on the map. Latitude and longitude are also noted for outfall and points of discharge location. Storm sewer system information will be maintained and updated and reported in Progress Reports.

Outfalls are discharge points where stormwater is discharged directly to surface waters of the state. Surface waters of the state include streams, lakes, ponds, county drains, and wetlands. Outfalls can be pipes, ditches, or even sheet flow from the facility. Some facilities will have an outfall where they can manually control the discharge.

Points of Discharge are discharge points where stormwater is discharged to a municipal or private separate storm sewer system. The visual assessment should be conducted as close to the point of discharge as possible before the storm water enters the municipal or private separate storm sewer system. Points of discharge include on-site catch basins and trench drains, in-street catch basins, and conveyances to roadside ditches.

Copies of the current facility storm sewer system maps are available at 1017 East Wesley Avenue, Muskegon, Michigan 49442. Additionally, copies of the storm sewer system maps and a list of the outfalls and points of discharge are provided in Appendix “A”.

2.3.3 Illicit Discharge Identification & Investigation Procedure – Field Observations

The District will conduct field observations for 100% of all outfalls and points of discharge locations during dry weather or more expeditiously if The District becomes aware of a non-stormwater discharge. Outfalls and points of discharge will be inspected by personnel trained to recognize all signs of possible illicit discharges. Dry weather screening will occur at least once every 5 years. The District’s next 5-year dry weather screening cycle will be conducted starting between year 2020 and year 2021. Preferably, each outfall and point of discharge will be inspected and evaluated following a period of at least 48-72 hours of dry weather.

The field observations will focus on visual inspection for the following:

- Outfall/point of discharge number
- Date/name of inspector
- Date of last rainfall
- Presence or absence of flow
- Presence or absence of standing water
- Water clarity and color
- Presence of oil sheen, trash and or other floatable materials
- Presence of bacterial sheen or slimes
- Excessive vegetative growth

- Odor
- Suds
- Presence of oil

❖ These characteristics are documented even if no flow is observed at the time of the inspection.

All field observations are detailed on a *"Screening Inspection Log"*. A copy of the Screening Inspection Log is provided in Appendix "D".

During field observations, in instances where the storm sewer outfalls and points of discharge are submerged or connected to another enclosed sewer, the inspector will observe the nearest upstream storm sewer location or access point. Additionally, if dry weather flow is observed and it is obvious that an illicit discharge is present and the source of the discharge is evident, The District will document the observations and the source and follow-up with applicable parties. Once a potential discharge is indicated at an outfall or point of discharge, additional inspection, field screening and source investigation activities are conducted.

2.3.4 Illicit Discharge Identification & Investigation Procedure – Field Screening & Source Investigation

At the time of the outfall or discharge point inspection, if dry weather flow is observed and the source is not obvious, the inspector who identified the discharge shall continue and conduct an upstream source investigation to determine the origin of the flow. The initial investigation includes visual and olfactory observations upstream from the outfall/point of discharge. If necessary, relevant indicator field screening or dye tracing will be conducted.

If the origin of the flow is not identified during the visual upstream investigation, a grab sample is collected from the discharge for indicator field screening analysis. Indicator monitoring/field screening is the secondary tool utilized for dry weather flow without obvious indicators such as very high turbidity, strong odors or visible discharge. Screening may include some or all of the indicator parameters:

- Temperature
- pH
- Detergents (i.e., surfactants)
- Chlorine
- Ammonia
- Turbidity
- Conductivity

Indicator parameters used to assess the dry weather flow shall be determined by the visual and olfactory observations and upstream source investigation.

Additional grab samples may be collected and delivered for external laboratory analysis, only if additional test parameters are required for the source investigation. The laboratory analysis parameters for grab samples are determined by the type of contamination suspected at the time of the source investigation. A copy of the Arch Environmental Group, Inc. (AEG) Stormwater Sampling and Analysis Protocol Screening is included in Appendix "D".

Laboratory indicator parameters are based on MDEQ guidance as specified in the reference sources identified above. The selected laboratory parameters are:

- Fluoride

- Coliform
- E-coli
- Potassium
- Color
- Ammonia

The exact procedure for tracking the illicit discharge will depend on the particular facts of each incident. At the time of the identification of the observed dry weather flow, the flow will be tracked upstream until the source is isolated. Once the source has been isolated down to a specific site location, the work will become source confirmation. If the source is not confirmed, additional fieldwork, building evaluation, or dye testing may be necessary. Additional source investigations will be conducted within 30 days of the original observed dry weather flow.

Once the elimination of an illicit connection or illicit discharge has occurred, an elimination report detailing the corrective actions with attached work orders, photos or dye tracing results will be compiled for documentation purposes. Field inspections will continue until it can be reported that no illicit connection or discharge is present at that outfall/point of discharge. Information regarding specific techniques are provided in the AEG Stormwater Sampling and Analysis Protocol Screening included in Appendix "D".

2.3.5 Illicit Discharge/Connection Elimination Procedure

Illicit discharges and connections are identified through reporting, routine storm sewer system inspections and dry weather screening inspections. A "How to Spot Illicit Discharges" poster along with a "How to Report/Hotline Numbers" posters are placed in the receiving/custodial areas in each facility to report concerns. The District's goal is to evaluate all potential unauthorized or suspected illicit discharge to the municipal separate storm sewer system (MS4), and perform any necessary notifications and reporting to the applicable agencies (i.e., MDEQ, local drain commission, etc.) within the required time period(s).

The District will evaluate and conduct the following actions regarding reported or observed illicit discharges/illegal dumping spills into the storm drainage system.

- If, in the opinion of the District, immediate action to address the suspected discharge is indicated, the District will conduct inspection activities within 24 hours of the identified discharge.
- Conduct source investigations, including applicable field screening to trace the origin of the materials within 30 days of the reported/observed illicit discharge.
    - The District will follow existing spill response procedures outlined in Section 2.3.10, under Spill Response, Policy & Procedures, if required.
- Once the source has been isolated down to a specific site location, the work will become source confirmation
- If the responsible party is identified, educate the party on the impacts of their actions, explain the stormwater requirements and provide information regarding Best Management Practices.
- Evidence of illicit discharges traced to other MS4 jurisdictions will be provided to the responsible MS4 operator along with any collected data to assist that MS4 operator in completing their investigations to correct the illicit discharge or connection.
- The District will cooperate with the MS4 operator in determining the source or type of illicit discharge and/or connection and will follow-up to ensure that appropriate action has been completed by the MS4 operator to eliminate the discharge.

- Continue inspection and follow-up activities until the illicit discharge activity has ceased.
- Document all activities utilizing the Illicit Discharge/Illegal Dumping Reporting form.

A copy of the Illicit Discharge/Illegal Dumping Reporting form is located in Appendix "E".

Once an illicit discharge has been confirmed from a district facility, the discharge will be corrected using the most expedient method possible based on the type and configuration of the discharge or connections. Other illicit discharges or releases of polluting materials will be corrected through administrative measures including employee training, placement of signs or markings, policy revisions, or any other steps necessary to eliminate the continued release of polluting materials to the MS4.

Within 60 days of a confirmed illicit connection from a district facility, The District will take steps to fix or eliminate the illicit connection. These steps include a review of corrective methods to be used to repair or eliminate the connection, determine the length of time the repair or elimination will take to complete, the cost of the elimination, the pollution potential and consider how the removal of the illicit connection will be confirmed. Corrective methods include capping, closing, or re-routing illicit connections to the sanitary sewer or other collection systems.

2.3.6 Illicit Discharge Elimination Program Policy

Prevention of pollution from storm water runoff and the protection of the quality of the waters of the State of Michigan are of utmost importance to The District. The District does not have regulatory authority to create or enforce ordinances. The District has developed a Board Policy Resolution to direct compliance and identify specific actions to be taken to ensure compliance with applicable NPDES permit Standards.

The District has a board policy resolution to direct compliance with these requirements. The District's School Board Resolution was reviewed and passed in August 2017. A copy of the developed School Board Policy Resolution is provided in Appendix "B".

The District Stormwater Manager or designee will be provided full access to all facilities and properties owned and operated by The District, as required, to inspect, investigate, and monitor suspected or confirmed illicit discharges or connections to the MS4.

Illicit Discharge means any discharge to, or seepage into the separate stormwater drainage system that is not composed entirely of stormwater or uncontaminated groundwater except discharges pursuant to an NPDES permit. Illicit discharges include but are not limited to the following:

- Dumping of motor vehicle fluids
- Improper disposal of household hazardous wastes
- Grass clippings
- Leaf litter
- Pet & other animal wastes
- Unauthorized discharges of sewage
- Industrial wastes
- Restaurant wastes
- Vehicle & equipment wash waters
- Any non-stormwater waste

All activities are documented utilizing the Illicit Discharge/Illegal Dumping Reporting form.

Illicit Connection means a physical connection to the MS4 separate stormwater system that primarily conveys non-stormwater discharges other than uncontaminated groundwater into the MS4 separate storm sewer system; or a physical connection not authorized or permitted by the local authority, where a local authority requires authorization or a permit for physical connections.

The District's policy is to eliminate all illicit connections or discharges from their facilities and restrict the discharge of polluting substances to the separate storm sewer system. The process to achieve these goals will consist of the inspection and screening of all storm sewer systems and elimination of any improper connection from any district facility to any waterway or the municipally owned separate storm sewer system (MS4).

Discharge Prohibitions

1. Prohibition of Illicit Discharges:
    a. The District prohibits the discharge of non-stormwater discharges into the storm drain system, including but not limited to pollutants or waters containing any pollutants.
2. The following discharge is not prohibited:
    a. This policy excludes prohibitions from the discharge or flows from firefighting activities to district MS4s. Discharge or flows from firefighting activities will be addressed only if they are identified as significant sources of pollutants to surface waters of the state.
    b. The following activities are not prohibited under this policy unless they are determined to be significant sources of pollutants to surface waters of the state:
        - Water line flushing and discharges from potable water sources.
        - Landscape irrigation runoff, lawn water runoff, and irrigation waters.
        - Diverted stream flows and flows from riparian habitats and wetlands.
        - Rising groundwater and springs.
        - Uncontaminated groundwater infiltration and seepage.
        - Uncontaminated pumped groundwater, except groundwater cleanups specifically authorized by NPDES permits.
        - Air conditioning condensation.

Prohibition of Illicit Connections

1. Improper connections in violation of this regulatory mechanism must be disconnected and redirected.
2. Illicit discharge and connections will be eliminated.
3. The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited by The District. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

2.3.7 Illicit Discharge Elimination Training

A training program is an important component of an effective IDEP. Training is required for all employees whose job responsibilities involve illicit discharge related activities, or indicate a potential to cause, witness, or report an illicit discharge or connection. Training is discussed in detail in Section 3.0 of this SWMP.

The SWMP includes schedules for routine inspection and maintenance as well as policies and procedures for collection, transportation, and disposal of wastes collected during maintenance operations.

2.3.8 Illicit Discharge Elimination Program Effectiveness

Muskegon Public Schools is required to track implementation of the illicit discharge elimination program stormwater management items and evaluate its effectiveness. Documentation of these items includes documentations of actions taken to eliminate illicit discharges. The following are examples of the types of performance measures and effectiveness measures that may be used to evaluate the effectiveness of the IDEP program. The following information will be reviewed annually, and will be used to focus and modify activities to maximize environmental benefits of the plan:

- Verify the distribution of public education posters.
- Number of outfalls/discharge points screened.
- Number of illicit connections found.
- Number of illicit connections eliminated.
- Number and type of discharges that are investigated.
- Actions conducted to follow-up discharges that are identified or reported.
- Number of scheduled clean-outs and routine maintenance work conducted.

The District shall evaluate:

1. Evaluate the number of illicit discharges and determine if discharges have decreased throughout the permit cycle.
2. Evaluate if the number of reported potential discharges has increased due to improved awareness.
3. Evaluate dry weather screening monitoring data to measure changes in water quality.

2.3.9 Illicit Discharge Elimination Program – BMP Table

BMP	Description of BMP	Timeframe	Measurable Goal	Measure of Assessment	Responsible Party
BMP #2.3.9.1 Facility Storm Sewer System Maps	Provide an up to date storm sewer system map. The maps shall identify the storm sewer system, location of outfalls and points of discharge, and names and locations of the surface waters of the state that receive the discharge.	In Progress Updates Ongoing as Needed Within 30 days of new outfalls, discharge points, structures and conveyances. Permit Cycle	100% of facilities mapped, and 100% of storm sewer system updates mapped.	Maintain facility site maps at 1017 East Wesley Avenue, Muskegon, MI 49442.	The District
				Update facility map with sewer system updates. Maintain maps for progress report submittal.	The District
BMP#2.3.9.2 Enforcement	Written policy to enforce elimination of illicit discharges into MS4 owned by the Permittee.	New Board Resolution Developed & Passed in 2017	Board Policy Resolution approved.	Copy of Board Policy Resolution.	The District
BMP #2.3.9.3 Dry Weather Screening	Dry Weather Screening conducted every 5 years. Dry weather screening will be conducted by personnel trained to recognize all signs of possible illicit discharges.	Subsequent round of DWS Scheduled for 2020-2021	100% of outfalls and point of discharges inspected and evaluated following a period of 48-72 hours of dry weather. Outfalls/points of discharges re-inspected if necessary.	Maintain dry weather screening inspection logs/reports.	The District
BMP #2.3.9.4 Illicit Discharge Reporting	Eliminate illicit discharges and connections through reporting, routine storm sewer system inspections and dry weather screening inspections.	Ongoing Throughout Permit Cycle	Place “How to spot illicit discharge/ How to Report-Hotline Numbers” posters placed in Receiving Rooms at each district facility. Goal is to have one poster at each facility.	Annually verify number of posters in place throughout The District.	The District
			Advertise reporting hotline on district webpage.	Track number of calls and document calls onto Illicit Discharge/Illegal Dumping Reporting form. (Appendix “E”).	

BMP	Description of BMP	Timeframe	Measurable Goal	Measure of Assessment	Responsible Party
BMP #2.3.9.5 Unauthorized Discharge/ Illicit Discharge Complaint Response	The District will immediately evaluate any potential unauthorized or suspected illicit discharge to the municipal separate storm sewer system (MS4) and perform any necessary notifications and reporting to the applicable agencies (i.e., MDEQ, local drain commission, etc.) within the required time period(s). This procedure is outlined in Section 2.3.10 Polluting Materials Emergency and Spill Response Policy & Procedures.	If, in the opinion of The District, immediate action to address the suspected discharge is indicated, The District will follow up within 7 days. Within 30 days of reported suspected discharge.	100% of unauthorized or suspected illicit discharges evaluated (field observation, field screening, and source investigation) and eliminated.	Documentation of relevant field observations, field screening or source investigations.	The District
BMP #2.3.9.6 Illicit Connections	Reroute, repair, or disconnect any illicit connections.	Within 60 days of identified illicit connection	Take steps to eliminate 100% of identified illicit connections.	Work order, receipt or report detailing the illicit connection correction activities.	The District
BMP #2.3.9.7 Illicit Discharge Elimination Training	Train staff on the identification and reporting of illicit discharges or improper connections and the cleanup/notification procedures for spills of polluting materials.	Once per permit cycle or during the 1st year of employment Throughout Permit Cycle	Goal of providing illicit discharge elimination training to all maintenance, transportation, custodial and skilled trade staff who work for The District. **[All Stormwater Training is outlined in Section 3.0 Training]**	Copy of sign in sheets and Agenda (if available).	The District
BMP #2.3.9.8 Notice of Intent to Discharge Tracer Dyes	Maintain approval from the MDEQ for authorization to discharge tracer dyes in surface waters per General Rule 97 to conduct source investigations.	As needed Throughout Permit Cycle	MDEQ approval to discharge tracer dyes.	Documentation of MDEQ approval.	The District

BMP	Description of BMP	Timeframe	Measurable Goal	Measure of Assessment	Responsible Party
BMP #2.3.9.9 IDEP program Performance & Effectiveness	Review performance measures to evaluate the effectiveness of the IDEP program. Items include; posting of IDEP public education posters, number of outfalls/discharge points screened, number of illicit connections found, number of illicit connections eliminated, number and type of violations investigated, and number of scheduled clean-outs and routine maintenance work conducted.	Annually Throughout Permit Cycle	Annual review of SWMP IDEP program performed. Evaluate reduced illicit discharges, increase reporting and evaluate dry weather screening data.	Maintain copy of SWMP annual review and evaluation information for progress reporting.	The District

2.3.10 Polluting Materials Emergency and Spill Response Policy and Procedures

Purpose

This policy and associated procedures have been developed to define appropriate and safe response procedures for spill or accidental releases of hazardous materials or substances at all The District's facilities.

Policy

The District will comply with all Federal, State, and local regulatory requirements for the management and reporting of all hazardous materials and/or waste releases.

The Maintenance Department will maintain responsibility for monitoring any changes in regulatory requirements regarding hazardous materials and waste spills or accidental releases. This policy will be revised as necessary based upon any changes in the regulatory requirements or internal experiences. All hazardous materials spills or releases will be thoroughly investigated by the Maintenance Supervisor.

The Maintenance Supervisor will immediately report any release of any polluting materials from the MS4 to surface waters or groundwater of the state, unless a determination is made that the release is not in excess of the threshold reporting quantities in the Part 5 Rules.

If it is determined that the release poses a threat to the safety or the environment outside the facility, the Maintenance Supervisor will report the release during regular working hours to the **MDEQ District Office at (616)-356-0500**, or after hours to the 24-hour **Michigan Pollution Emergency Alerting System (PEAS) at 1-800-292-4706** immediately or within 24 hours of knowledge of the release. Any release of oil (includes gasoline, diesel fuel, used oil and mineral spirits) to navigable waters or adjoining shorelines will be reported to the 24-hour **National Response Center (NRC) at 1-800-424-8802** immediately or within 24 hours of knowledge of the release. In the event the spill takes place after working hours, site personnel will contact the assigned coordinator to notify the Maintenance Supervisor that an incident has occurred.

The Maintenance Supervisor is responsible for notifying the MDEQ and/or other local, state, or federal regulatory agencies in the event that a release to the MS4 or surface waters occurs at levels above the threshold reporting quantities referenced in the PA 451 Part 5 rules.

Emergency Spill Response Procedures

Each facility having the potential for the release of a hazardous material or substance shall have trained and knowledgeable staff members to respond and/or implement spill response procedures for that facility. Spill containment materials such as absorbent pigs, pads, booms, diking materials, storm drain covers, etc. are to be stored and maintained at all facilities for use by trained employees in the event of a spill or accidental release.
The following general guidelines are to be implemented as applicable in managing spills and accidental releases:

1) For spills in which there is no immediate dangers to employees, students, or the general public and does not represent a danger of contamination to a sanitary sewer, storm sewer, or the ground:

A. Contain spill to the smallest area possible.
B. Review the Material Safety Data Sheet/Safety Data Sheet for determination of proper spill handling, and appropriate personal protective equipment selection.
C. Place compatible absorbent material or spill pads on the area.
D. Clean up and containerize the absorbent materials.

E. Contact the Maintenance Department for waste disposal instructions and additional cleaning requirements.

2) For a spill that represents an immediate danger to employees, students, or the general public and/or has the potential to impact the sanitary sewer, storm sewer, or the ground:

A. Notify the Maintenance Department.
B. If there is the treat of fire, explosion, or if any person(s) exhibits severe symptoms of exposure, contact 911 to initiate local emergency services.
C. Alert anyone in the area and begin evacuation procedures.
D. Use absorbent socks, booms, or other absorbents to dike the spill area if safe to do so and secure the area from unauthorized personnel. Refer to the Material Safety Data Sheet to determine the proper personal protective equipment.
E. Remove all sources of ignition for releases of flammable or combustible materials.
F. The Maintenance Department will initiate all notification procedures and contact the contracted emergency response contractor to mitigate and remediate the release.
G. Complete the "Hazardous Material or Waste Spill Exposure Form" for all exposed persons.
H. The Maintenance Supervisor will assess the spill and notify all agencies as required.

3) Spills of Elemental Mercury

A. Contact the Maintenance Department immediately.
B. Remove all personnel from the immediate spill area without traveling through the spill area, and if possible, close the door and lower the thermostat in the affected room.
C. Keep all potential contaminated persons in a close area to the spill but outside of the affected area to minimize additional exposure to mercury vapors.
D. Remove and containerize any potentially contaminated clothing or other articles from affected persons.
E. The Maintenance Supervisor will contact the appropriate emergency response contractor to clean-up the spill and properly decontaminate and/or dispose of all contaminated articles.

Refer to sections **2.3.4 Illicit Discharge Identification & Investigation Procedure – Field Screening & Source Investigation** and **2.3.5 Illicit Discharge/Connection Elimination Procedure** for implementation timeframes.

This guidance has been developed in anticipation of potential releases of hazardous materials and substances. The procedures outlined in this guidance should only be implemented by those persons who have received sufficient training and are competent in the handling of the released material.

As appropriate, illicit discharges or releases of polluting materials will be corrected through administrative measures including employee training, placement of signs or markings, policy revisions, or any other steps necessary to eliminate the continued release of polluting materials to the MS4. The District will conduct follow-up inspections and sampling as needed to ensure that appropriate action has been completed.

2.4 Construction Site Stormwater Runoff Control Program

The District's goal is to establish procedures for construction stormwater runoff control to meet minimum measure requirements to the maximum extent practicable.

Construction refers to actions that result in a disturbance of the land, including clearing, grading, excavating, and other similar activities.

Construction-related activities are activities that support the construction project such as stockpiles, borrow areas, concrete truck washouts, fueling areas, material storage areas and equipment storage areas.

2.4.1 Construction Site Stormwater Management Program Objectives

A. Process for notifying the Part 91 Agency appropriate staff when soil or sediment is discharged to the MS4 from a construction activity.
    - The procedure shall allow for the receipt and consideration of complaints or other information submitted by the public or identified internally as it relates to construction stormwater runoff control.
B. Procedure for when to notify the MDEQ when soil, sediment, or other pollutants are discharged to the MS4.
    - Other pollutants include pesticides, petroleum derivatives, construction chemicals, and solid wastes that may become mobilized when land surfaces are disturbed.
C. Procedure for ensuring that construction activity one acre or greater in total land disturbance obtains a Part 91 Permit.

2.4.2 Construction Notification Procedure

The MDEQ certified construction stormwater operator inspector conducting site inspections will normally detect any soil or sediment entering the MS4.

In the event an inspector identified a discharge during an inspection:

1. The inspector shall document all details of the soil erosion and sedimentation control deficiency and report to the Maintenance Supervisor/The District's Stormwater Manager.
2. The Maintenance Supervisor/The District's Stormwater Manager (or designee) is responsible for assessing any suspected or confirmed discharge and notifying the appropriate agency.
3. The District will notify the local Part 91 agency or MDEQ when significant runoff of soil, sediment, or other pollutants such as pesticides, petroleum derivatives, construction chemicals, or solid wastes from the construction site discharges to the MS4 or surface waters of the state within 24 hours of discovery or as otherwise required by the issuing agency.

In the event of a public complaint:

The District will track the receipt of complaints submitted by the public or noted by staff during regular course of business hours of soil, sediment, or other pollutants such as pesticides, petroleum derivatives, construction chemicals, and solid wastes that are being discharged into the MS4.

The tracking will include:

- Name of person providing the complaint.
- Location (address or nearest cross street).
- Description of follow up (e.g., date referred to the Part 91 enforcing agency).

The District will notify the Part 91 Agency, when soil, sediment, and other pollutants such as pesticides, petroleum derivatives, construction chemicals, and solid wastes are discharged into the MS4.

The District ensures that construction activity of one acre or greater in total earth disturbance with the potential to discharge to the MS4 does obtain a Part 91 Permit and State of Michigan Permit by Rule.

2.4.3 Part 91 Permit

The District will ensure that any construction activities that result in a land disturbance meeting the following criteria:

- Greater than or equal to one (1) acre, or
- Disturb less than one (1) acre that is part of a common plan of development or sale.

Will obtain a Part 91 Permit through the site plan review process with the appropriate county or municipal permitting agency.

2.4.4 Permit by Rule Compliance

The District shall comply with the State of Michigan Permit by Rule (Rule 323.2190) for stormwater discharge from construction activity. Sites disturbing one (1) to five (5) acres with a point source discharge to the waters of the state receive automatic storm water coverage upon securing a SESC permit from the appropriate Part 91 recognized County Enforcing Agency, Municipal Enforcing Agency, or Authorized Public Agency (APA) under the authority of Part 91.

1. Construction sites with at least one (1) acre but less than five (5) acres of soil disturbance with a surface water discharge, must obtain a county or municipal SESC permit, and are required to follow the provisions of the Permit by Rule, but do not need to notify the MDEQ of the construction activity.
2. Construction sites disturbing over five (5) acres with a point source discharge to the waters of the state must obtain a county or municipal SESC permit and submit a Notice of Coverage (NOC) and other pertinent documents and the appropriate fee to the MDEQ.

Requirements of Permit by Rule include, but are not limited to:

- Weekly site inspections conducted by a Certified Construction Stormwater Operator.
- Inspection within 24 hours of a precipitation event that results in a discharge from the site by a Certified Construction Stormwater Operator.

2.4.5 Construction Site Stormwater Management-BMP Table

BMP	Description of BMP	Timeframe	Measurable Goal	Measure of Assessment	Responsible Party
BMP #2.4.5.1 Notification of Deposit during Inspection	The District will notify the local part 91 agencies or MDEQ when runoff from the construction site discharges significant pollutants to the MS4 or surface waters of the state within 24 hours of discovery or as otherwise required by the issuing agency. The District Stormwater Manager (or designee) is responsible for assessing any suspected or confirmed discharge and notifying the appropriate agency. (Refer to section 2.4.2)	As necessary Throughout Permit Cycle	100% discharges identified and appropriate agencies notified. Control of potential system failure.	Documentation of Construction Stormwater Operator site inspection.	The District
	Track complaints submitted by the public or noted by staff during regular course of business of soil, sediment, or other pollutants such as pesticides, petroleum derivatives, construction chemicals, and solid wastes which are being discharged into the MS4.			Documentation of public complaint (Name of person providing the complaint, location [address or nearest cross street] description of follow up [e.g., date referred to the Part 91 enforcing agency]).	The District
BMP #2.4.5.2 Part 91 Permit	The District will ensure that any construction activity that result in a land disturbance greater than or equal to one (1) acre or disturbs less than one (1) acre that is part of a common plan of development or sale will obtain a Part 91 Permit through the site plan review process.	As necessary Throughout Permit Cycle	100% of permits obtained.	Copy of permit and associated soil erosion and sedimentation control plans.	The District

BMP	Description of BMP	Timeframe	Measurable Goal	Measure of Assessment	Responsible Party
BMP #2.4.5.3 Permit by Rule	Construction sites between (1) acre and five (5) acres of soil disturbance follow the provisions of the Permit by Rule, but do not need to notify the MDEQ of the construction activity.	As necessary Throughout Permit Cycle	Goal of 100% of weekly and precipitation event inspection completed by certified Construction Stormwater Operator.	Copy of inspections.	The District
	Construction sites disturbing over five (5) acres with a point source discharge to the waters of the state must follow provisions of the Permit by Rule and submit a Notice of Coverage (NOC) and other pertinent documents and the appropriate fee to the MDEQ.		Goal of 100% of weekly and precipitation event inspection completed by certified Construction Stormwater Operator.	Copy of inspections.	The District
			100% NOC obtained.	Copy of NOC	The District

2.5 Post Construction Stormwater Controls for New Developments & Redevelopments

Post-construction storm water runoff is the storm water that would flow from a project site to the Municipal Separate Storm Sewer System (MS4) after completion of a development or redevelopment project (not during the project).

2.5.1 Post Construction Stormwater Management Program Objectives

The post-construction stormwater run-off controls are necessary to maintain or restore stable hydrology in receiving waters by limiting surface runoff rates and volumes and reducing pollutant loadings from sites that undergo development or significant redevelopment.

The objects of this program and associated procedures are to:

a. Develop and implement regulatory mechanisms to address post-construction stormwater runoff for new development and redevelopment projects, including preventing or minimizing water quality impacts.
b. Develop and implement regulatory mechanisms for projects that disturb one or more acre, including projects less than an acre that are part of a larger common plan of development or sale and discharge into the applicants MS4.
c. Ensure post construction controls to minimize water quality impacts by following water quality treatment standards.
d. Require that BMPs be designed on a site-specific basis to reduce post-development total suspended solids loading.
e. Procedure to meet water quality treatment and channel protection standards of new development or redevelopment projects.
f. Address “hot spots”.
g. Submit site development plans for review and approval.
h. Require adequate long-term O&M of BMPs by ordinance or other regulatory means.

The District has developed a board policy resolution in 2017 to direct compliance with these requirements. In addition to the board policy resolution, the following sections identify specific actions to be taken by The District to ensure compliance with the applicable standards. The District’s developed School Board Resolution was reviewed and passed in 2017. A copy of the approved School Board Policy Resolution is provided in Appendix “B”.

2.5.2 Water Quality Treatment Standard

The District’s goal is to include water quality treatment volume standards for each new construction or redevelopment project where the area of disturbance exceeds one (1) acre. One or more of the following treatment standards should be included as part:

1) Treat the first one inch of runoff from the area of new construction or redevelopment.
2) Treat the runoff generated from ninety percent (90%) of all runoff-producing storms for the project site.

The source of the rainfall data for the water quality treatment standard of requiring the treatment of the runoff generated from the ninety percent (90%) of all runoff-producing storms is:

- The MDEQ memo dated March 24, 2006, which is available via the internet at http://www.michigan.gov/documents/deq/wrd-hsu-ninety-percent_557709_7.pdf

Treatment methods shall be designed on a site-specific basis to achieve the following:

1. A minimum of eighty percent (80%) removal of total suspended solids (TSS), as compared with uncontrolled runoff, or
2. Discharge concentrations of TSS not to exceed 80 milligrams per liter (80mg/L).

A minimum treatment volume standard is not required where site conditions are such that TSS concentrations in storm water discharges will not exceed 80mg/L.

Treatment methods shall be designed on a site-specific basis to reduce the discharge of sedimentation or TSS from the site. Such methods may include:

1. Stand pipe filters in storm water detention basins
2. Sediment filter tanks
3. Catch basin sumps
4. Aqua-Swirls®
5. Treatment trains
6. Rain Gardens
7. Pervious pavement systems

2.5.3 Channel Protection Performance Standard

The District understands that channel protection criteria is necessary to maintain post-development stormwater runoff volumes and peak flow rates at or below existing levels for all storms up to the 2-year, 24-hour event. "Existing Levels" means the runoff volume and peak flow rate for the last land use prior to the planned new development or redevelopment.

Where more restrictive channel protection criteria already exist or are needed to meet the goals of reducing runoff volume and peak flows to less than existing levels on lands being developed or redeveloped, The District will consider use of the more restrictive criteria rather than the standard permit requirements.

A post-construction stormwater runoff program compliance assistance document is available via the internet at www.michigan.gov/documents/deq/wrd-storm-MS4-ComplianceAssistance_470350_7.pdf

2.5.4 Site –Specific Requirements

Because each site has its' own special circumstances and conditions, the following BMPs will be considered as appropriate according to site conditions:

- Reduce runoff from the site to greatest extent possible (provide holding basins, divert water through grassed swales).
- Prevent spills and discharges.
- Control waste such as building materials, concrete washout, chemicals, litter, and sanitary waste.
- Phasing will be considered to limit amount of exposed soils.
- Interim soils stabilization methods are to be considered (temporary seeding, mulching etc.).
- Buffer preservation (avoid exposing soils to property limits).
- Inspection staff will be trained in the proper maintenance and operation of Soil Erosion and Silt Prevention measures.

Construction plans will be reviewed for sites with known soil and/or groundwater contamination, including potential "hot spots" and evaluate the use of infiltration BMPs to meet water quality treatment and channel protection criteria to ensure that infiltration BMPs do not exacerbate existing conditions. Hot spots include areas with the potential for significant pollutant loading such as vehicle service and maintenance facilities, vehicle equipment cleaning facilities, fleet storage areas for buses, and outdoor liquid container storage.

Additional water quality standards or pretreatment measures may be required in addition to those included in the water quality criteria in order to remove potential pollutant loadings from entering either groundwater of surface water systems.

Pretreatment measures include:

Stormwater Hot Spots	Minimum Pre-Treatment Options
Vehicle service and maintenance facilities	1. Oil/Water Separators/Hydrodynamic Devices 2. Use of Drip Pans and/or Dry Sweep Material under Vehicles/Equipment 3. Use of Absorbent Devices to Reduce Liquid Releases 4. Spill Prevention Response Program
Fleet storage areas for buses	BMPs that are part of a Stormwater Pollution Prevention Plan (SWPPP)
Vehicle Fueling Stations	1. Oil/Water Separators/Hydrodynamic Devices 2. Water Quality Inserts for Inlets 3. Spill Prevention Response Program
Vehicle equipment cleaning facilities	BMPs that are part of a Stormwater Pollution Prevention Plan (SWPPP)
Outdoor liquid container storage	Spill Prevention Response Program

2.5.5 Site Plan Review

This policy is to establish requirement to submit a site plan for review as required by the MDEQ NPDES Phase II Stormwater Discharge Permit. The District will prepare and submit a written application, including a site plan for review and approval of post-construction stormwater runoff BMPs, for all new construction or redevelopment projects where the area of disturbance exceeds one (1) acre. The application will be completed in a form and manner as prescribed by the local municipality or governing unit in which the property is located. The site plan will be reviewed by the appropriate local municipal, county, state or other governmental agency. The review of the stormwater site plan will provide local municipal, county, state or other governmental agencies with the ability to ensure that water quality objectives, erosion and sediment control requirements, and BMP maintenance are adequately considered.

The goal of the site plan review is to:

- Minimize clearing and grading.
- Protect waterways.

- Limit soil exposure.
- Protect steep slopes and cuts.

2.5.6 Long-term Operation & Maintenance of Stormwater Controls

The District will identify all stormwater controls and mechanisms for all new construction or redevelopment projects where the area of disturbance exceeds one (1) or more acres. The District will develop "BMP Operation and Maintenance" guidance manuals for each property, including:

- Develop a map of each facility identifying the location and type of structural controls, if any exist.
- Develop a guidance manual that will provide a listing of structural controls including a site diagram showing the location of each control, instructions for inspection and operation, and the inspection and/or maintenance schedules for each control mechanism.
- Stormwater runoff facilities, after construction and approval, shall be maintained in good condition, in accordance with the approved storm water plan.
- Update and revise the stormwater structural controls on facility site diagrams as identified during scheduled inspections or within 30 days following the completion of a new facility or reconstruction/redevelopment site project.

The Maintenance Supervisor will ensure that local work instructions are developed based on BMPs. The District's trained staff or certified contractors will conduct routine inspection of all identified structural controls and complete maintenance, repair, or replacement as necessary.

2.5.7 Post Construction Stormwater Management-BMP Table

BMP	Description of BMP	Timeframe	Measurable Goal	Measure of Assessment	Responsible Party
BMP #2.5.7.1 Regulatory Mechanism	Develop and implement regulatory mechanisms to address post-construction stormwater runoff for new development and redevelopment projects, including preventing or minimizing water quality impact. Develop and implement regulatory mechanisms for projects that disturb one or more acre, including projects less than an acre that are part of a larger common plan of development or sale and discharge into the applicants MS4.	Board Policy Resolution Developed & Passed in 2017	Updated Board Policy Resolution passed.	Copy of new Board Resolution Policy when passed.	The District
BMP #2.5.7.2 Post Construction Standards	Ensure post-construction channel protection standards and water quality treatment standards are met.	As necessary Throughout Permit Cycle	All applicable site plans are reviewed by the appropriate local municipal, county, state or other governmental agency.	Copy of site plan.	The District
BMP #2.5.7.3 Site Specific	The District will review construction plans for sites with known soil and/or groundwater contamination, including potential "hot spots" and evaluate the use of infiltration BMPs to meet water quality treatment and channel protection criteria.	As necessary Throughout Permit Cycle	Reduce or eliminate discharge of pollutants during construction on contaminated sites.	Documentation of additional stormwater controls.	The District
BMP #2.5.7.4 Site Plan Review	Prepare and submit a written application, including site plan for construction of storm water management systems for all new construction or redevelopment projects where the area of disturbance meets or exceeds one (1) acre.	As necessary Throughout Permit Cycle	All applicable site plans are reviewed by the appropriate local municipal, county, state or other governmental agency.	Copy of reviewed plans.	The District

2.6 Pollution Prevention & Good Housekeeping Program

Develop, implement, and ensure compliance through a program of operation & maintenance of BMPs, with the ultimate goal of preventing or reducing pollutant runoff to the maximum extent practicable from operation that discharge stormwater to surface waters of the state.

2.6.1 Pollution Prevention & Good Housekeeping Program Objectives

a. Maintain an up-to-date inventory of owned facilities and stormwater structural controls.
b. Procedure for updating and revising inventory of stormwater structural controls.
c. Procedure for assessing each facility for the potential to discharge pollutants.
d. Develop an SOP (SWPPP) for all facilities with a high potential for pollutant runoff.
e. Procedure identifying BMPs currently implemented or to be implemented to prevent or reduce pollutant runoff at each facility with medium and lower potential to discharge.
f. Procedure for prioritizing of catch basins/manholes for maintenance and cleaning.
g. Schedule for routine catch basin/manhole inspection, maintenance and cleaning.
h. Provide the geographic location of stormwater structures.
i. Procedure for dewatering, storage and disposal of materials extracted from storm sewer cleaning.
j. Procedure for inspecting and maintaining storm water controls.
k. Procedure for new structural controls to be designed and implemented in accordance with post-construction stormwater runoff control performance standards.
l. Best management practices for operation and maintenance activities.
m. Procedure for street sweeping.
n. Procedure for pesticide application.
o. Training.
p. Contractor requirements and oversight.

It is the ultimate goal of The District to prevent and reduce pollutant/contaminant runoff from their facilities to the maximum extent practicable. All BMPs are implemented at all low, medium and high priority facilities.

2.6.2 Structural Control Inventory & Schedule Table

No prioritization will be needed, as all structures are to be inspected and maintained equally. All structural controls will have routine inspection, maintenance schedules, and long-term procedures which adequately control, to the maximum extent practicable, pollution removal and control. Structural control effectiveness will be determined based on the results of these inspections and repaired, upgraded, or replaced as indicated.

Facility	Priority Level of Potential Discharge (High, Medium, Low)	Type of Structural Control	Number of Controls	Inspection/Maintenance Schedule
Craig School (Closed) 1580 Park St., Muskegon, MI	Low	Catch Basins/Manholes	5	Inspect Annually, Clean once per Permit Cycle
		Open Pipe Outlet	1	Inspect Annually, Maintain as Needed
Glenside Elementary School 1213 West Hackley Ave. Muskegon, MI	Low	Catch Basins/Manholes	8	Inspect Annually, Clean once per Permit Cycle
		Open Pipe Outlet	1	Inspect Annually, Maintain as Needed
Hackley Administration Facility 297 Webster, Muskegon, MI	Low	Catch Basins/Manholes	4	Inspect Annually, Clean once per Permit Cycle
		SEMCOG Posters	1-3	Replace as Needed
		Illicit Discharge Reporting Numbers Poster	1	Replace as Needed

Facility	Priority Level of Potential Discharge (High, Medium, Low)	Type of Structural Control	Number of Controls	Inspection/Maintenance Schedule
Lakeside Elementary School 2312 Denmark St., Muskegon, MI	Low	Catch Basins/Manholes	3	Inspect Annually, Clean once per Permit Cycle
		Open Pipe Outlet	1	Inspect Annually, Maintain as Needed
Maintenance & Transportation Facility (District Service Building) 1800 E. Laketon Ave. Muskegon, MI	High	Catch Basins/Manholes	9	Inspect Annually, Clean Once per Permit Cycle
		Open Pipe Outlet	2	Inspect Annually, Maintain as Needed
		Infiltration Manhole	1	Inspect Annually, Maintain as Needed
		Rip Rap	1	Inspect Annually, Maintain as Needed
		Retention Pond	2	Inspect Annually, Maintain as Needed
		Oil Water Separator	2	Inspect Annually, Maintain as Needed
		SEMCOG Posters	1-3	Replace as Needed
		Illicit Discharge Reporting Numbers Poster	1	Replace as Needed

Facility	Priority Level of Potential Discharge (High, Medium, Low)	Type of Structural Control	Number of Controls	Inspection/Maintenance Schedule
Marquette Elementary School 48 Bennett Ave., Muskegon, MI	Low	Catch Basins/Manholes	18	Inspect Annually, Clean once per Permit Cycle
		Open Pipe Outlet	1	Inspect Annually, Maintain as Needed
		SEMCOG Posters	1-3	Replace as Needed
		Illicit Discharge Reporting Numbers Poster	1	Replace as Needed
Moon Elementary School 1826 Hoyt Street Muskegon, MI	Low	Catch Basins/Manholes	8	Inspect Annually, Clean once per Permit Cycle
		Open Pipe Outlet	1	Inspect Annually, Maintain as Needed
		SEMCOG Posters	1-3	Replace as Needed
		Illicit Discharge Reporting Numbers Poster	1	Replace as Needed

Facility	Priority Level of Potential Discharge (High, Medium, Low)	Type of Structural Control	Number of Controls	Inspection/Maintenance Schedule
Muskegon Community Education Center (MCEC) 571 Apple Ave., Muskegon, MI	Low	Catch Basin	4	Inspect Annually, Clean Once per Permit Cycle
		Groundwater Sump	1	Inspect Annually, Maintain as Needed
		Open Pipe Outlet	1	Inspect Annually, Maintain as Needed
		SEMCOG Posters	1-3	Replace as Needed
		Illicit Discharge Reporting Numbers Poster	1	Replace as Needed
Muskegon High School 80 West Southern Ave., Muskegon, MI	Medium	Catch Basins/Manholes	24	Inspect Annually, Clean once per Permit Cycle
		Open Pipe Outlet	2	Inspect Annually, Maintain as Needed
Muskegon Middle School 1150 Amity, Muskegon, MI	Low	Catch Basins/Manholes	14	Inspect Annually, Clean once per Permit Cycle

Facility	Priority Level of Potential Discharge (High, Medium, Low)	Type of Structural Control	Number of Controls	Inspection/Maintenance Schedule
Nelson Elementary School 550 West Grand Ave., Muskegon, MI	Low	Catch Basins/Manholes	13	Inspect Annually, Clean once per Permit Cycle
Oakview Elementary School 1420 Madison Ave, Muskegon, MI	Low	Catch Basins/Manholes	12	Inspect Annually, Clean once per Permit Cycle
		Underground Detention System	1	Inspect Annually, Maintain as Needed

2.6.3 Facility Assessment & Prioritization

The District has identified all applicant owned facilities with a discharge of stormwater to surface waters of the state, and during mapping of each facility, inventoried the number of stormwater structural controls (i.e. catch basins, detention basins, etc.) at each site. Each location was assessed to determine high, medium and low potential to discharge pollutants to surface waters of the state.

The District considered the following when assessing each facility:

- Absence of any factors,
- Presence of urban pollutants stored at the site (i.e. sediment, nutrients, metals, hydrocarbons, pesticides, fertilizers, herbicides, chlorides, trash, bacteria, or other site-specific pollutants,
- Identification of improperly stored materials,
- Potential for polluting activities to be conducted outside (i.e. vehicle washing),
- Proximity to water bodies,
- Poor housekeeping practices,
- Discharge of pollutants of concern to impaired waters.

For facilities that have a high potential to discharge pollutants to surface waters of the state, a Stormwater Pollution Prevention Plan (SWPPP) and/or Pollution Incident Prevention Plan (PIPP) for salt storage facilities will continue to be implemented.

BMPs currently implemented by The District at facilities with medium and lower potential for the discharge of pollutants to surface waters of the state include:

1. Good housekeeping practices,
2. Employee training,
3. Routine visual inspections,
4. Spill prevention and response.

This inventory will be updated as facilities and structural stormwater controls are added, removed, or no longer owned or operated by the applicant following routine inspections or following new construction or redevelopment projects. Priority level assessments will be revised within 30 days following the completion a new facility or reconstruction/redevelopment.

2.6.4 Storm Sewer Structure Controls Inspection & Maintenance Policy & Procedure

1. Develop a schedule for inspecting and maintaining catch basins and stormwater controls at each facility, for the reduction of pollutant runoff. A schedule is included in Structural Control Inventory & Schedule Table.
2. Visually inspect all stormwater controls identified on facility maps. Inspection includes; structural integrity of the structure, sediment build-up, flow, overall functionality and presence of erosion.
3. Note inspection information on the inspection form. A copy of the inspection form “Structural BMP Table” is located in Appendix “D”.
4. When inspecting stormwater controls, review the site for BMPs currently implemented to prevent or reduce pollutant runoff at each facility. BMPs include:
    - Review of “No Dumping” stencils at storm drains.
    - Review of catch basins/manholes cleaned.

- Dumpster good housekeeping practices.
- Garden, green space and signage inventories.
- "SEMCOG" poster placement at facilities.
- Illicit discharge reporting numbers poster placement at facilities.
- "How to spot illicit discharge/ How to Report-Hotline Numbers" poster placement at facilities.
- Spill kit availability at facilities.

5. Document BMPs identified during inspection.
6. Following the inspection, the stormwater controls should be prioritized for cleaning and maintenance. Prioritize locations based on the following:
    - Drainage structures that are designated as consistently generating the highest volumes of trash and/or debris.
    - Areas with high amounts of build-up sediment. A build-up of accumulated solid material that is greater than or equal to the one-third guideline established by the EPA.
    - Areas of significant erosion.
    - Areas of significant cracking or sinkholes.
7. Once the inspection is complete, the stormwater manager or designated person will review the report and determine if a work order or other item is needed to work with relevant departments or contractors to fix any problems.
8. If an illicit discharge is suspected, follow the procedure outlined in the Illicit Discharge Elimination Program.
9. Retain inspection forms for each stormwater structural control inspected.
10. Retain documentation regarding the scheduling or completion of the repair/maintenance if completed.
11. Debris and maintenance waste removed as part of the maintenance and/or repairs shall be disposed of in accordance with the Structural BMP Operation & Maintenance Waste Disposal procedures.

Furthermore, staff members conducting maintenance and grounds activities are provided IDEP and pollution prevention/good housekeeping training. All structural controls will have routine inspection, maintenance schedules, and long-term procedures which adequately control, to the maximum extent practicable, pollution removal and control. Structural control effectiveness will be determined based on the results of these inspections and repaired, upgraded, or replaced as indicated. This procedure will be reviewed on an annual basis and updated as needed or 30 days following the implementation of a new stormwater structural control.

2.6.5 Structural BMP Operation & Maintenance Waste Disposal Procedures

Waste materials generated from operation, maintenance, and cleaning activities associated with storm sewer systems has typically been discharged back into the storm sewer system. This type of discharge is unauthorized per Part 31, Water Resources Protection (Part 31) of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA) and is therefore illegal. The combined solid and liquid waste stream (solid/liquid waste) from cleaning storm sewer systems is legally defined as "Liquid Industrial By-products" pursuant to Part 121, Liquid Industrial By-products (Part 121) of NREPA.

The District will ensure that all waste materials generated during operation and maintenance of structural stormwater controls are properly characterized, transported, and disposed as required under State of Michigan PA 451 Part 111 (hazardous wastes), Part 121 (liquid industrial by-products), and Part 115 (solid wastes). At a minimum, the following procedures will be implemented for wastes generated from cleaning or maintaining storm sewer structural controls.

Structural BMP Operation & Maintenance Waste Characterization

Prior to conducting cleaning or maintenance to storm sewer structural controls, a certified stormwater operator will complete a waste generation determination. This determination will include a visual inspection of the structure and identification of any waste materials to be generated during the cleaning or maintenance process. The certified operator will document a description of materials currently in the structure and other observations used to determine if potential contaminants are present. Visual observations and physical characteristics to be examined and documented as part of the waste characterization protocols include identification or the presence of:

- Oil or petroleum sheens
- Sedimentation or solids
- Odors
- Color
- Staining
- Vegetation conditions
- Floatables
- Other damage to the structure or observations identifying potential contaminants

Visual observations will be recorded and an assessment completed determining if additional evaluation or testing will be required prior to removal of the wastes. Contaminated materials will be characterized using physical & chemical analysis as required to determine if the resulting wastes are hazardous wastes regulated under part 111 of PA 451 (NREPA). Non-hazardous contaminated materials will be removed and managed as "Liquid Industrial By-products" as required under part 121 of PA 451 (NREPA).

Waste Disposal Methods for Non-Contaminated Materials

Non-contaminated waste materials generated during cleaning or maintenance of storm sewer structures will be properly disposed using one of the following methods:

1. Have the waste transported to drying beds to separate the solid/liquid waste. This is usually performed at a publicly owned treatment plant or at a privately owned permitted facility where the liquid portion of the waste stream is separated from the solids and treated.
2. Request permission from the local wastewater treatment plant operator to discharge the combined solid/liquid waste into the sanitary system. Most treatment plants will require pre-treatment prior to the discharge. All applicable local ordinance provisions must be followed.
3. When conducting catch basin maintenance activities where the above options are not available, the following methods can be used as long as there are no discharges to surface waters during dry weather conditions:
    - Conduct visual inspection to ensure the water in the sump has not been contaminated. If necessary, collect a grab sample of the water and look for signs of contamination such as visible sheen, discoloration, obvious odor, etc. If there is any doubt of the quality of the water, it should be collected into a vacuum truck and treated as Liquid Industrial By-Products under Part 121 or Part 115 of PA 451 (NREPA).
    - Using a sump pump, or any other pumping mechanism, remove the majority of water in the sump of the basin without disturbing the solid material below. Do not use pumps connected to the vacuum truck's holding tank.
    - The clear water may then be directly discharged to one of the following:
        - Sanitary system (with prior approval from local sewer authority).

- Curb and gutter.
- Back into the storm sewer system as long as it is contained within the system during dry weather condition to ensure no discharge into surface water.
- Applied to the ground adjacent to the catch basin (evenly distributed at a maximum rate of 250 gallons/acre/year).

- The remaining liquid/solid in the sump should be collected with a vacuum truck and disposed of off-site in accordance with MI P.A. 451 Parts 115 or 121.

The District does not currently own or operate storm sewer cleaning or transportation equipment. If the District contracts with a private contractor to transport liquids generated from cleaning of catch basins or other structures, that contractor must be registered and permitted as a Uniform Liquid Industrial By-Product Hauler under the provisions of HMTA.

Waste Disposal Methods for Contaminated Materials

Waste materials generated during operation and maintenance of storm sewer systems found or suspected to be contaminated with pollutants or hazardous substances will be characterized, packaged, marked, labeled, stored, transported, and disposed as a liquid industrial by-product under Part 121 or Part 115 of PA 451 (NREPA).

2.6.6 Pollution Prevention/Good Housekeeping – Municipal Operations & Maintenance Activities

The District recognizes the importance of reducing pollutant runoff from maintenance activities. The following procedure will include an assessment of the potential activities for the potential to discharge pollutants. The assessment shall identify the pollutants that could be discharged from the applicable operation and maintenance activity and the BMPs implemented or to be implemented to prevent or reduce pollutant runoff.

PROCEDURE

Applicable operations and maintenance activities include parking lot and sidewalk maintenance, cold weather operations, vehicle washing, maintenance of vehicles, land disturbance and landscape. Bridge maintenance, right-of-way maintenance and unpaved road maintenance do not apply to The District.

Roadways/Parking Lots

Maintenance: Pothole, sidewalk, curb and gutter repair.
Possible Pollutants: Fuel, oil, sediment, concrete.
BMPs to address Pollutants:

1. Contractors and in-house staff contracted to complete for these jobs are informed of stormwater management practices to reduce pollution in stormwater.
2. Avoid mixing excess amounts of fresh concrete or cement.
3. Never dispose of washout into the street, storm drains, ditches or creeks.
4. Stencil storm drains to prevent disposal of wash water.
5. Schedule patching, resurfacing and surface sealing during dry weather.
6. If it rains unexpectedly, take appropriate action to prevent pollution of stormwater runoff (e.g., divert runoff around work areas, cover materials).
7. Maintain pollution prevention/good housekeeping practices, which is to remove stockpiles (asphalt materials, sand, etc.) by the end of the day to a covered location. Alternatively, cover the piles if they cannot be moved.

Process for updating assessment: Contractor or project is assessed on an ongoing basis, and problems are addresses when found.

Cold Weather Operations

Maintenance: Plowing, sanding, deicing, snow pile disposal.

Possible Pollutants: Sodium, magnesium, calcium, potassium, chloride, turbidity.

BMPs to address Pollutants:

1. Keep all deicing material covered or in waterproof containers.
2. Prevent deicer drainage to storm sewers.
3. Mechanical removal of as much snow or ice as possible prior to applying deicing chemicals.
4. Proper salt storage management.
5. Maintain application equipment in good working condition.

Process for updating assessment: BMPs will be assessed for effectiveness within 30 days following their addition or removal.

Vehicle Washing

Maintenance: Washing of busses, staff vehicles and maintenance equipment.

Possible Pollutants: Petroleum based wastes, metals, and nutrients.

BMPs to address Pollutants:

1. Rinse grass from lawn care equipment on permeable (grassed) areas.
2. School car wash fundraising events will not be permitted on school grounds.
3. Vehicle washing shall be performed at a commercial auto wash facility.

Process for updating assessment: BMPs will be assessed for effectiveness within 30 days following their addition or removal.

Vehicle Maintenance

Possible Pollutants: Petroleum based wastes, metals, and nutrients.

BMPs to address Pollutants:

1. Oil-water separators will be inspected routinely and serviced as necessary to maintain efficiency.
2. All vehicle or equipment maintenance will take place inside or away from storm drains where drains connecting to the sanitary system can receive all wastes.
3. All drains within maintenance garages will be dye tested to assure that no drains flow into the separate storm sewer system.
4. Recycle used motor oil, diesel oil, other vehicle fluids, and vehicle parts whenever possible.

Process for updating assessment: BMPs will be assessed for effectiveness within 30 days following their addition or removal.

Landscaping

Possible Pollutants: Wood chips, sediment, sand, and compost.

BMPs to address Pollutants:

1. Place temporary stockpiled material away from storm drains, and berm or cover stockpiles to prevent material releases into the storm drain. Alternatively, place stockpiles on permeable (grassed) areas.
2. Conduct annual stream back inspections.
3. Provide adequate buffer areas at stream banks.
4. Proper Storage, handling, and use of pesticides, herbicides, and fertilizers.

Process for updating assessment: BMPs will be assessed for effectiveness within 30 days following their addition or removal.

Land Disturbance

Possible Pollutants: Sediment runoff.

BMPs to address Pollutants:

1. Plan land clearing so soil is not exposed for long periods of time.
2. Place temporary stockpiled material away from storm drains, and berm or cover stockpiles to prevent material releases into the storm drain.
3. Protect against sediment flowing into drains.
4. Install sediment barriers.

Process for updating assessment: BMPs will be assessed for effectiveness within 30 days following their addition or removal.

ASSESSMENT

Pollution prevention inspections ensure that these BMPs are carried out properly. Any issues identified during the inspections will be reviewed and addressed by the Stormwater Manager.

2.6.7 Street Sweeping Procedure, Prioritization & Schedule

PRIORITIZATION

The MDEQ NPDES Phase II Stormwater Discharge Permit requires a procedure for prioritizing owned streets, parking lots, and other impervious infrastructure for street sweeping based on the potential to discharge pollutants. The District evaluated each facility for the presence of the following factors:

- Potential for polluting activities to be conducted outside
- Proximity to water bodies
- Traffic volume
- Land use
- Absence of any factors

PROCEDURE

The District does not own or operate sweeping equipment. However, The District will be proactive and undertake the following activities to reduce the potential to discharge pollutants to surface waters of the state from parking lots and other impervious infrastructures.

1. Conduct seasonal efforts to remove leaves.
2. Inspect parking lot and street areas.
3. Conduct hand sweeping of debris to prevent accumulated wastes.
4. Waste disposal areas will be kept free of litter and debris.
5. Analyze sediment, removed from an inlet cleaning if it is suspected of being contaminated with a hazardous material, prior to disposal. Sediment or materials determined to be hazardous waste will be disposed of in accordance with the Structural BMP Operation & Maintenance Waste Disposal procedures.
6. Contract out street cleaning when appropriate.

This prioritization will be updated as facilities and structural stormwater controls are added, removed, or no longer owned or operated by the applicant following routine inspections, or as traffic volume, land use or sediment and trash accumulation increases.

PRIORITIZATION LEVELS & SCHEDULE

All low, medium and high prioritized parking lots and streets are inspected on the same schedule in an effort to reduce pollutants.

Facility Name	Priority Level of Potential Discharge* (High, Med, Low)	Street Sweeping Schedule
Craig School	Low	Hand Sweeping, Spring and Fall
Glenside Elementary School	Low	Hand Sweeping, Spring and Fall
Hackley Administration Facility	Low	Hand Sweeping, Spring and Fall
Lakeside Elementary School	Low	Hand Sweeping, Spring and Fall
Maintenance & Transportation Facility (District Service Building)	Medium	Hand Sweeping, Spring and Fall
Marquette Elementary School	Low	Hand Sweeping, Spring and Fall
Moon Elementary School	Low	Hand Sweeping, Spring and Fall
Muskegon Community Education Center (MCEC)	Low	Hand Sweeping, Spring and Fall
Muskegon High School	Medium	Hand Sweeping, Spring and Fall
Muskegon Middle School	Low	Hand Sweeping, Spring and Fall
Nelson Elementary School	Low	Hand Sweeping, Spring and Fall
Oakview Elementary School	Low	Hand Sweeping, Spring and Fall

If required, following monthly inspections indicating higher traffic volume, land use or sediment and trash accumulation at all low, medium and high prioritized parking lots and streets, The District shall contract a commercial street sweeping company.

DISPOSAL

If a commercial street sweeper is contracted to clean a parking lot and street areas for The District, the street sweeping activities are subject to the solid waste requirements. Solid waste must be managed under Part 115 requirements. Dispose of the solid waste in a licensed landfill. The contractor hired to do the street sweeping is responsible for proper disposal of the waste material. The contracted sweeping will not be completed when streets are wet, so dewatering of the collected debris should not be required.

2.6.8 Managing Vegetated Properties

The District has established this policy to prevent or reduce pollutant runoff from vegetated land:

1. The District requires all contracted personnel who participate in the application of pesticides to be trained and licensed by the State of Michigan under the Commercial Pesticide Application Certification Program for relevant categories as applicable to prevent or reduce pollutant runoff from vegetated land.
2. Whenever practicable, an integrated pest management technique will be implemented.

2.6.9 Contractor Requirements & Oversight

The District requires contractors to comply with pollution prevention and good housekeeping BMPs. The District will perform one or all of the following activities for applicable contractors and projects to comply with all pollution prevention and good housekeeping BMPs as appropriate and comply with pollution as well as provide oversight to ensure compliance:

- Contractor Notification
- Contractor Training
- Pre-project Meeting/Review
- Periodic Inspections

Prior to conducting work, contractors will be directed to conduct online “Contractor Training”.

2.6.10 Pollution Prevention/Good House Keeping Training

A training program is an important component to effective pollution prevention. Training is required for all employees whose job responsibilities involve municipal or maintenance activities. Training is discussed in detail in Section 3.0 of this SWMP.

2.6.11 Pollution Prevention/Good Housekeeping –BMP Table

BMP	Description of BMP	Timeframe	Measurable Goal	Measure of Assessment	Responsible Party
BMP #2.6.11.1 Structural Control Inventory	Provide an up-to-date inventory of the number of stormwater structural controls for each facility's (i.e. catch basins, detention ponds). Update facilities potential to discharge pollutants (high, medium, low) following the update.	In process, further updated as needed within 30 days following the completion of a new facility or reconstruction/ redevelopment. Ongoing Throughout Permit Cycle	100% of stormwater structural controls inventoried.	Maintain list of inventory and potential to discharge priority level. Submit updated list with progress report, noting if priority levels have changed.	The District
BMP #2.6.11.2 SWPPP development & implementation (SOP)	Develop a "Stormwater Pollution Prevention Plan (SWPPP)/Standard Operating Procedure (SOP)" for maintenance, transportation, and storage facilities/Implement policies & procedures.	Completed in 2017 Ongoing Throughout Permit Cycle	SWPPP completed and 100% of inspections implemented.	Copy of SWPPP and copy of inspections.	The District
BMP #2.6.11.3 Stormwater Structural Control Inspections	Visually inspect stormwater controls identified on facility maps.	Annually Throughout Permit Cycle	Routine schedule implemented and inspections reviewed by stormwater manager.	Maintain inspection forms/reports.	The District
BMP #2.6.11.4 Review for BMP's Implemented	While inspecting stormwater controls, review the site for BMPs currently implemented to prevent or reduce pollutant runoff at each facility; such as storm drain stencils, garden areas, areas cleaned, areas repaired, SEMCOG poster placement, Illicit discharge education posters, and spill kits.	Annually Throughout Permit Cycle	Annual inspections completed and reviewed by stormwater manager.	Documentation of inspection findings (number of posters, number of spill kits, inventory of gardens, pictures of stencils, pictures of spill kits).	The District

BMP	Description of BMP	Timeframe	Measurable Goal	Measure of Assessment	Responsible Party
BMP #2.6.11.5 Prioritization of Storm Sewer Locations for Maintenance & Cleaning	Following the inspection, the stormwater controls should be prioritized for cleaning and maintenance. Prioritize locations based on: (1) drainage structures that are designated as consistently generating the highest volumes of trash and/or debris, (2) areas with high amounts of build-up sediment, (3) areas of significant cracking or sinkholes.	Annually Throughout Permit Cycle	Prioritization locations identified.	Copy of prioritization.	The District
BMP #2.6.11.6 Cleaning & Maintenance (Catch Basin/ Manhole Cleaning)	The District will ensure that all waste materials generated during operation and maintenance of structural stormwater controls are properly characterized, transported, and disposed as required under State of Michigan PA 451 Part 111 (hazardous wastes), Part 121 (Liquid Industrial By-Products), and Part 115 (solid wastes).	As needed or once per permit cycle Throughout Permit Cycle	Prioritized locations cleaned once per permit cycle. All waste disposed as required.	Copies of Waste Manifests.	The District
BMP #2.6.11.7 Roadways & Parking Lots	Storm drains stenciled to prevent disposal of wash water into storm drains.	As needed Throughout Permit Cycle	Storm drain stencils inspected and maintained as need.	Copy of work order. Photos of stenciling.	The District
BMP #2.6.11.8 Cold Weather Operations	Proper salt storage management. Maintain storage bags and equipment in good working condition.	Ongoing Throughout Permit Cycle	Continue proper salt storage and management as previously implemented.	Contractor and in-house staff training completed. See section 3.0 Training.	The District

BMP	Description of BMP	Timeframe	Measurable Goal	Measure of Assessment	Responsible Party
BMP #2.6.11.9 Vehicle Washing	Alternatively, rinse grass from lawn care equipment on permeable (grassed) areas.	Ongoing Throughout Permit Cycle	100 % of applicable staff trained on where to wash lawn care equipment.	Copy of sign-in sheets and Agenda (if available).	The District
	School car wash fundraising events will not be permitted on school grounds.	Ongoing Throughout Permit Cycle	Notice sent to staff regarding policy.	Copy of e-mail or policy.	
	Vehicle washing shall be performed at a commercial auto wash facility.	Ongoing Throughout Permit Cycle	100 % of applicable staff trained on were to wash vehicles.	Copy of sign-in sheets and Agenda (if available).	
BMP #2.6.12.10 Vehicle Maintenance	All drains within maintenance garages will be dye tested to assure that no drains flow into the separate storm sewer system.	Drains verified, additional testing as needed Throughout Permit Cycle	100% of floor drains inspected.	Copy of inspection information.	The District
	Oil-water separators will be inspected routinely and serviced as necessary to maintain efficiency.	Annually Throughout Permit Cycle	Oil-water separators cleaned and functioning properly.	Copy of invoices or shipping papers.	
	Recycle used motor oil, diesel oil, other vehicle fluids, and vehicle parts whenever possible.	As needed Throughout Permit Cycle	Reduction in amount of disposed material and amount of material shipped for off-site disposal.	Copy of invoices or shipping papers.	
BMP #2.6.12.11 Stream Bank Inspection	Conduct stream bank inspections. Inspect banks along properties to identify erosion or potential erosion problems and check for water clarity conditions. Properly maintain buffer areas.	Annually Throughout Permit Cycle	100% of bank inspections completed.	Copy of inspection sheets/reports.	The District

BMP	Description of BMP	Timeframe	Measurable Goal	Measure of Assessment	Responsible Party
BMP #2.6.11.12 Land Disturbance	Place temporary stockpiled material away from storm drains, and berm or cover stockpiles to prevent material releases into the storm drain. Protect against sediment flowing into drains.	As needed Throughout Permit Cycle	100 % of applicable staff trained.	Copy of sign-in sheets and Agenda (if available).	The District
BMP #2.6.11.13 Street Sweeping	Conduct hand sweeping in the parking lots/roadways in the spring and fall.	Spring & Fall Throughout Permit Cycle	Inspections completed.	Copy of work order or schedule.	The District
	Street sweeping conducted by a professional sweeping company.	As needed Throughout Permit Cycle		Copy of invoice or disposal documentation.	The District
BMP #2.6.11.14 Vegetated Properties (Pesticides)	The District requires all contracted personnel who participate in the application of pesticides will be trained and licensed by the State of Michigan under the Commercial Pesticide Application Certification Program for relevant categories as applicable, to prevent or reduce pollutant runoff from vegetated land.	Ongoing Throughout Permit Cycle	Inspections completed. Application of pesticides will only be completed by trained and licensed applicators.	Documentation of in-house staff license or copy of contractor receipt.	The District

BMP	Description of BMP	Timeframe	Measurable Goal	Measure of Assessment	Responsible Party
BMP #2.6.11.15 Contractor Oversight	The District requires contractors to comply with pollution prevention and good housekeeping BMPs. The District will complete contractor notification, pre-project meeting and periodic inspections to provide oversight to ensure compliance.	As needed Throughout Permit Cycle	Contractors training and informed of pollution prevention and good housekeeping techniques.	Copy of sign-in sheets, pre-project meeting notes or inspections.	The District & Contractors/ Vendors
	Direct contractors to online "Contractor Training" prior to conducting work. **[All Stormwater Training is outlined in Section 3.0 Training]**	As needed Throughout Permit Cycle	Contractors training and informed of pollution prevention and good housekeeping techniques.	Copy of sign-in sheets, pre-project meeting notes or inspections.	The District & Contractors/ Vendors
BMP #2.6.11.16 Training	Pollution prevention and good housekeeping training.	As needed Throughout Permit Cycle Once per permit cycle or during the 1st year of employment Throughout Permit Cycle	Goal of providing training to maintenance staff who work for The District. **[All Stormwater Training is outlined in Section 3.0 Training]**	Copy of sign-in sheets and Agenda (if available).	The District
BMP #2.6.11.17 Pollution Prevention & Good Housekeeping Activities Review	Summary of annual activities for the "Pollution Prevention and Good Housekeeping".	Annually Throughout Permit Cycle	Annual review of SWMP performed. Maintain copy of SWMP annual review. Determine the level of district involvement and identify areas of improvement.	Maintain copy of SWMP annual review and evaluation information for progress reporting.	The District

3.0 Training

The District will provide education and training for applicable employees and contractors using a variety of methods depending on their specific job function. At a minimum, all applicable district employees will be required to have general awareness training on the topics included in the PEP. All applicable district employees will be required to attend or otherwise obtain general awareness training at least once per permit cycle or during the 1st year of employment.

The District has implemented a comprehensive staff training program based on each employee's participation and responsibilities under this program. The employee training program is categorized in three (3) separate levels summarized as follows:

LEVEL I TRAINING-General Awareness Training

Level I training is required for all district employees at least once per permit cycle for current employees and during the 1st year of employment for new employees. General Awareness training is provided in the form of an 11-minute video produced by Arch Environmental Group titled, **"When it Rains, It Drains…The Stormwater Question".** This video is also available on the stormwater webpage.

LEVEL II TRAINING-General Awareness, Pollution Prevention & Good Housekeeping, and Illicit Discharge Reporting

Level II training is required for all employees whose job responsibilities involve illicit discharge related activities, or indicate a potential to cause, witness, or report an illicit discharge or connection. This training includes the previously described video as well as a review of The Districts Stormwater Management Program Plan and instruction on identification and notification of illicit discharges or connections. This training is provided to applicable transportation, maintenance, custodial, and food service employees.

LEVEL III TRAINING- Stormwater Pollution Prevention, Lawn Maintenance, and Structural Control Inspection, Maintenance, and Repair Training

Level III training is provided in the form of videos, PowerPoint presentations, and hands-on training. This training is provided to district supervisors, maintenance, and lawn service staff.

LEVEL IV TRAINING (CONTRACTORS) – Contractor Training

Contractor training is provided to contractors employed by The District to conduct activities with a potential to impact water quality. Contractor training is provided in the form of an online video produced by Arch Environmental Group titled, **"Stormwater Awareness & Pollution Prevention Training for Contracted Public School District Vendors & Employees".**

3.1 Training Table

BMP	Description	Measurable Goal	Target Audience	Timeframe
Level I Training	General Awareness Training	Record attendance with sign-in sheets for each training session. The District will retain records of trainings for future review with regard to SWMP.	All district employees.	Once per permit cycle for current employees and during the 1st year of employment for new employees. Throughout Permit Cycle
Level II Training	General Awareness, Pollution Prevention & Good Housekeeping, and Illicit Discharge Reporting	Record attendance with sign-in sheets for each training session. The District will retain records of trainings for future review with regard to SWMP.	In-house custodial, maintenance, transportation and food service employees.	Once during permit cycle current employees and during the 1st year of employment for new employees. Throughout Permit Cycle
Level III Training	General Awareness, Pollution Prevention & Good Housekeeping, Illicit Discharge Reporting, Stormwater Pollution Prevention, Lawn Maintenance, and Structural Control Inspection, Maintenance, and Repair Training	Record attendance with sign-in sheets for each training session. The District will retain records of trainings for future review with regard to SWMP.	District supervisors, in-house maintenance, and lawn service staff.	Once every three (3) years within permit cycle for current applicable employees if conducting activities outlined in the SWMP. Throughout Permit Cycle
Contractor Training	Stormwater specific training for on-site contractors.	Require stormwater-specific training for on-site contractors. The District will provide referral information for contractors to obtain stormwater education through private or state training resources. Additionally, the referral will notify contractors of the location of the current district SWMP for review. Obtain records of training for future review of the SWMP.	Contractors employed by The District to conduct activities with a potential to impact water quality.	At the time of employment. Throughout Permit Cycle

4.0 Total Maximum Daily Load (TMDL) Restrictions

4.1 What are TMDLs

When a lake or stream fails to meet federal water quality standards, the Clean Water Act requires that a "Total Maximum Daily Load (TMDL)" limit be developed. Studies are completed to determine the sources impacting the water body and to develop goals so that the water body can meet the applicable standards.

A TMDL describes the process used to determine how much of a particular pollutant a lake or stream can assimilate and sets pollution reduction targets for the water body.

4.2 Non-TMDL Locations

Upon reviewing the points of discharge to surface waters of the state from the facilities owned by The District, it was discovered that water bodies the below facilities discharge into do not currently have TMDLs.

The facilities were reviewed and determined to discharge to Ryerson Creek, Muskegon River, and Muskegon Lake. These currently do not currently have TMDLs.

1. Hackley Elementary School
2. Lakeside Elementary School
3. Marquette Elementary School
4. Muskegon Community Education
5. Muskegon High School
6. Muskegon Middle School
7. Nelson Elementary School
8. Oakview Elementary School

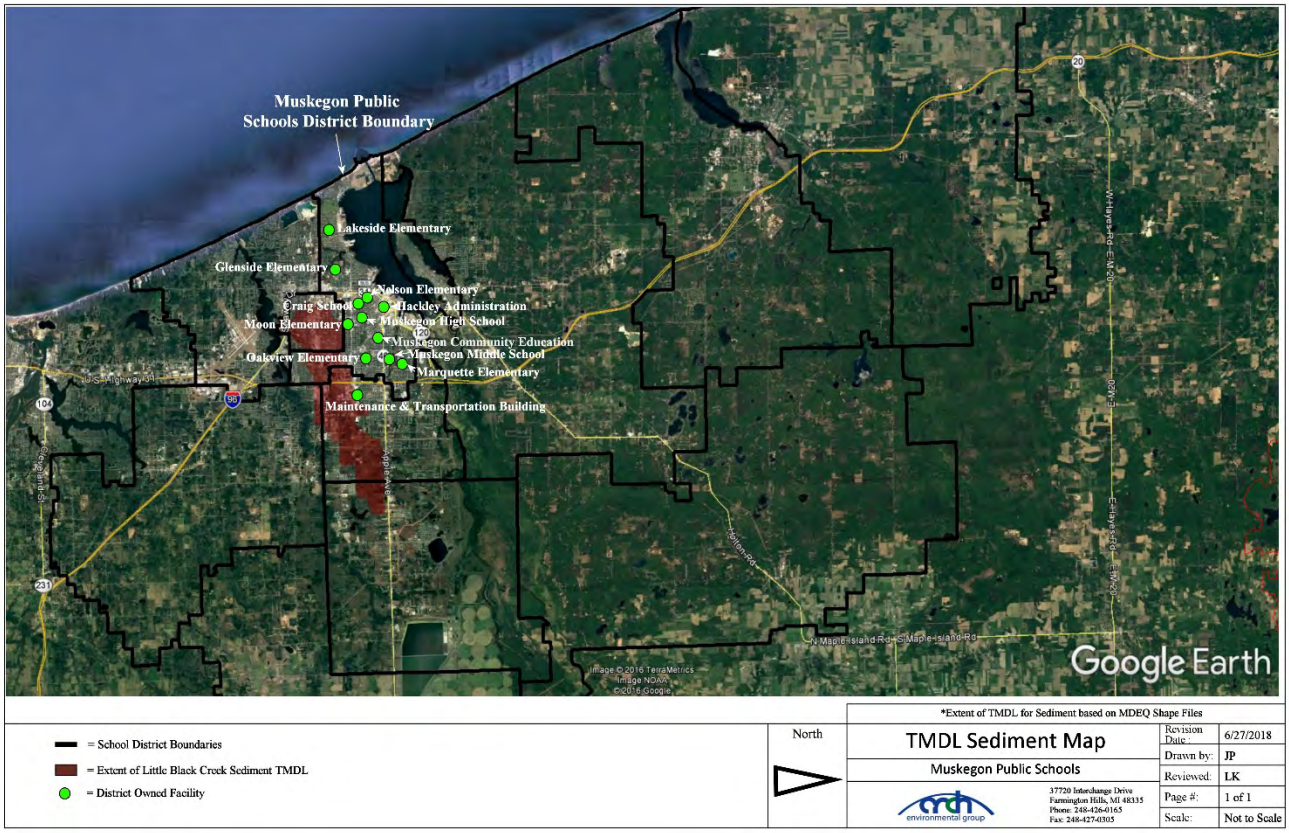
4.3 Little Black Creek

Little Black Creek was placed on Section 303(b) list for **biota (sedimentation/siltation).** The TMDL reach of Little Black Creek, a cold water designated water body, is located in Muskegon County and extends from Mona Lake upstream to Violet Avenue, located just north of the Marathon Petroleum defunct refinery site (Figure 1). The impaired designated uses (Michigan's WQS Rule 100) include the lack of support of cold water fish and other aquatic life (macroinvertebrate) communities. This condition served as the basis for placing Little Black Creek on Michigan's Section 303(d) list of impaired water bodies requiring the development of a TMDL.

The following District facility discharge stormwater either directly or indirectly within the Little Black Creek TMDL boundaries identified in Map 3 below:

1. Maintenance & Transportation Facility (District Service Building)

Map 3 – Total Maximum Daily Load Map[3]



4.4 Ruddiman Creek

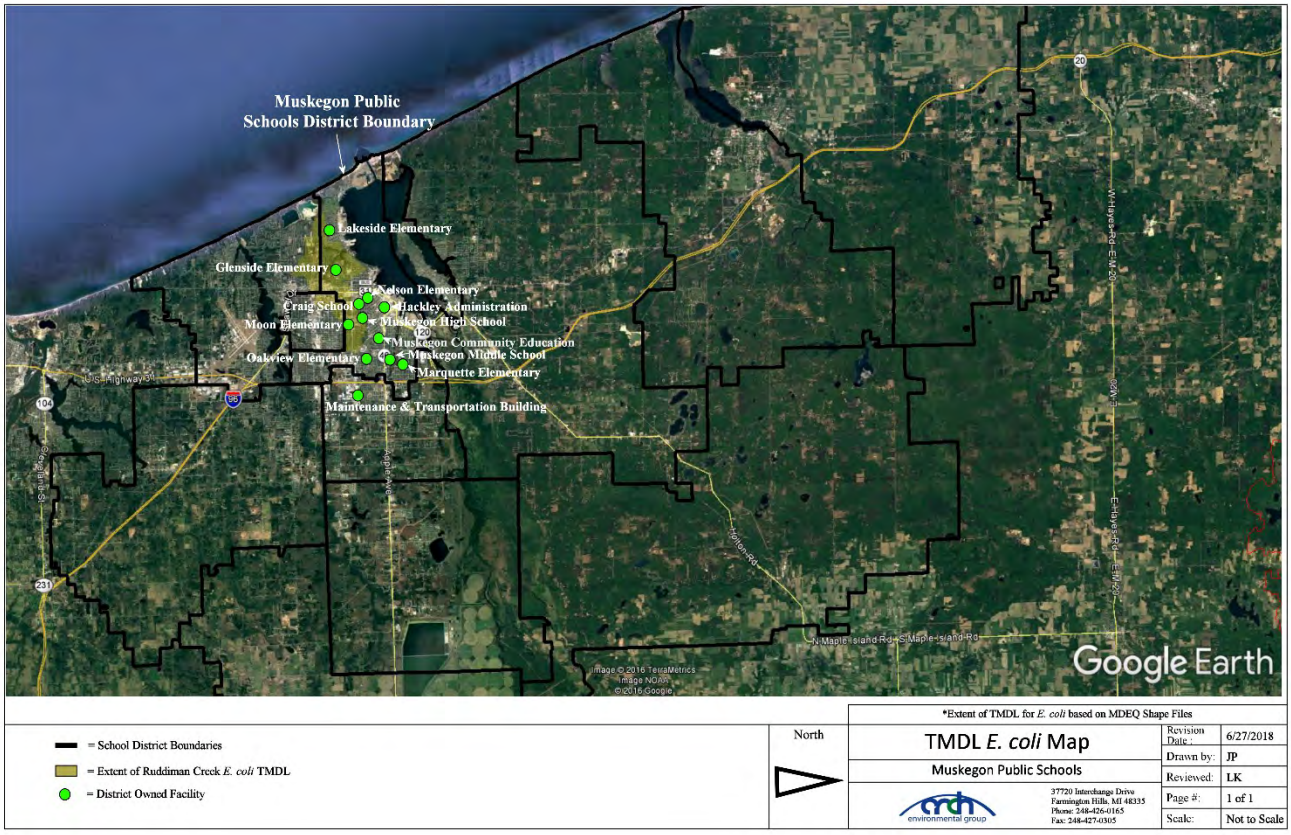
Ruddiman Creek was placed on the Section 303(d) list due to impairment of recreational uses as indicated by the presence of elevated levels of **E. coli**. Ruddiman Creek was first placed on the Section 303(d) list in 1998 due to impairment of recreational uses by E. coli (Creal and Wuycheck, 1998). Illicit sewage discharges to storm sewers were suspected based on high levels of E. coli found in 1996 and 1997.

The following District facilities discharge stormwater either directly or indirectly within the Ruddiman Creek TMDL boundaries identified in Map 4 below:

1. Craig School
2. Glenside Elementary School
3. Moon Elementary School
4. Muskegon High School

[3] Total maximum daily load boundaries based on Michigan Department of Environmental Quality Water Quality Standards Shapefiles.

Map 4 – Total Maximum Daily Load Map[4]



4.5 TMDL Implementation – Monitoring Plan

4.5.1 Prioritized TMDL Best Management Practices

The below lists stormwater BMPs that are targeted to improve water quality impairments associated by the TMDL.

E. COLI

1. The District will use its website to provide the public with information regarding pet waste (SEMCOG links). Additionally, SEMCOG pet waste posters are placed at various school buildings.
2. The District will prohibit illicit discharges, inspect and monitor suspected illicit discharges, and enforce elimination of the illicit discharges and connections.
3. The District has reviewed all facilities for cross-connections between the sanitary and storm sewer systems.
4. The District will conduct hand sweeping in the parking lots/roadways in the spring and fall.
5. The District has established programs for soil erosion and sediment control from new or redevelopment construction. Such developments require permits and inspections for practices to keep exposed soils on site or controlled from runoff.
6. The District has implemented routine visual inspections of stormwater structural controls.

[4] Total maximum daily load boundaries based on Michigan Department of Environmental Quality Water Quality Standards Shapefiles.

7. The District will remove excessive sediments from structural sediment removal systems to maintain the maximum designed performance. Sediments will be disposed of offsite in accordance with Parts 115 or 121.

ALL TMDLs

1. The District will continue to use its website to provide the public information regarding local TMDL issues (phosphorous, E. coli, biota and dissolved oxygen TMDL Best Management Practice).
2. The District will continue to educate staff, faculty, and students using various venues including the **"Seven Simple Steps to Clean Water"** program educational materials developed by the various watershed groups specifically related to these issues on the stormwater management webpage.
3. The District is in the process of post-construction stormwater board resolution to require implementation of the stormwater standards for construction.
4. Adequately maintains vegetation around stormwater facilities, ditches, and ponds.
5. Provide training to applicable staff and confirm training from contractors including restrictions on the use of phosphorous containing fertilizers, soaps, cleaners and other chemicals that could impact the separate storm drain system.

Procedure

Prioritization of BMPs is based on the District targeted TMDL pollutants. Priority is given to BMPs that reduce E. coli loads and address water quality for biota.

Assessment

The MDEQ Phase II Stormwater Discharge Permit Application requires a monitoring plan for assessing the effectiveness of the BMPs currently being implemented, or to be implemented, in making progress toward achieving the TMDL pollutant load reduction requirement. Monitoring shall be specifically for the pollutant identified in the TMDL. Monitoring may include wet weather outfall/discharge point monitoring and dry-weather screening. A summary of the monitoring results and conclusions related to TMDLs will be provided during progress reporting.

The District will conduct the following for applicable TMDLs:

1. Samples will be collected at least twice during the permit cycle; including previous monitoring. The goal is to collect samples from at least 50% of the outfall/discharge points at facilities associated with the TMDL. An effort will be made to sample water quality parameters during a representative (i.e. >0.25" and <1.5") wet weather event.
2. The results of the sampling will be assessed and summarized in a brief report to be shared with the public via the stormwater webpage at least once during the permit cycle.
3. Based on a review of the sampling results, BMP implementation will be reviewed and BMPs may be updated or revised to ensure progress toward achieving TMDL pollutant load reductions.

4.5.2 TMDL - BMP Table

BMP	Description of BMP	Timeframe	Measurable Goal	Measure of Assessment	Responsible Party
BMP #4.5.2.1 Webpage	The District will use its website to provide the public with information regarding pet waste (SEMCOG links). Additionally, SEMCOG pet waste posters are placed at various school buildings.	Ongoing Throughout Permit Cycle	Posters placed throughout TSD facilities.	Maintain links on webpage. Maintain copies of webpage review.	The District
	The District will continue to use its website to provide the public information regarding local TMDL issues (E.coli and biota and TMDL Best Management Practice).		Material available on webpages.		
BMP #4.5.2.2 Sampling	Samples will be collected outfall/discharge points at facilities associated with the TMDL. An effort will be made to sample water quality parameters during a representative (i.e. >0.25" and <1.5") wet weather event.	Twice per Permit Cycle Throughout Permit Cycle	The goal is to collect samples from at least 50% of the outfall/points of discharge at facilities associated with the TMDL.	Copy of inspection paperwork and sample results.	The District
BMP #4.5.2.3 Sample Summary	The results of the sampling will be assessed and summarized in a brief report to be shared with the public via the stormwater webpage at least once during the permit cycle.	Once per Permit Cycle Throughout Permit Cycle	Report available for public review.	Report completed and available on webpage.	The District

Appendix "A"

Outfall/Discharge Point Receiving Water Table & Site Stormwater Structure Maps

Created: September 15, 2017
Revision Date: June 27, 2018

Muskegon Public Schools
Receiving Waters Table

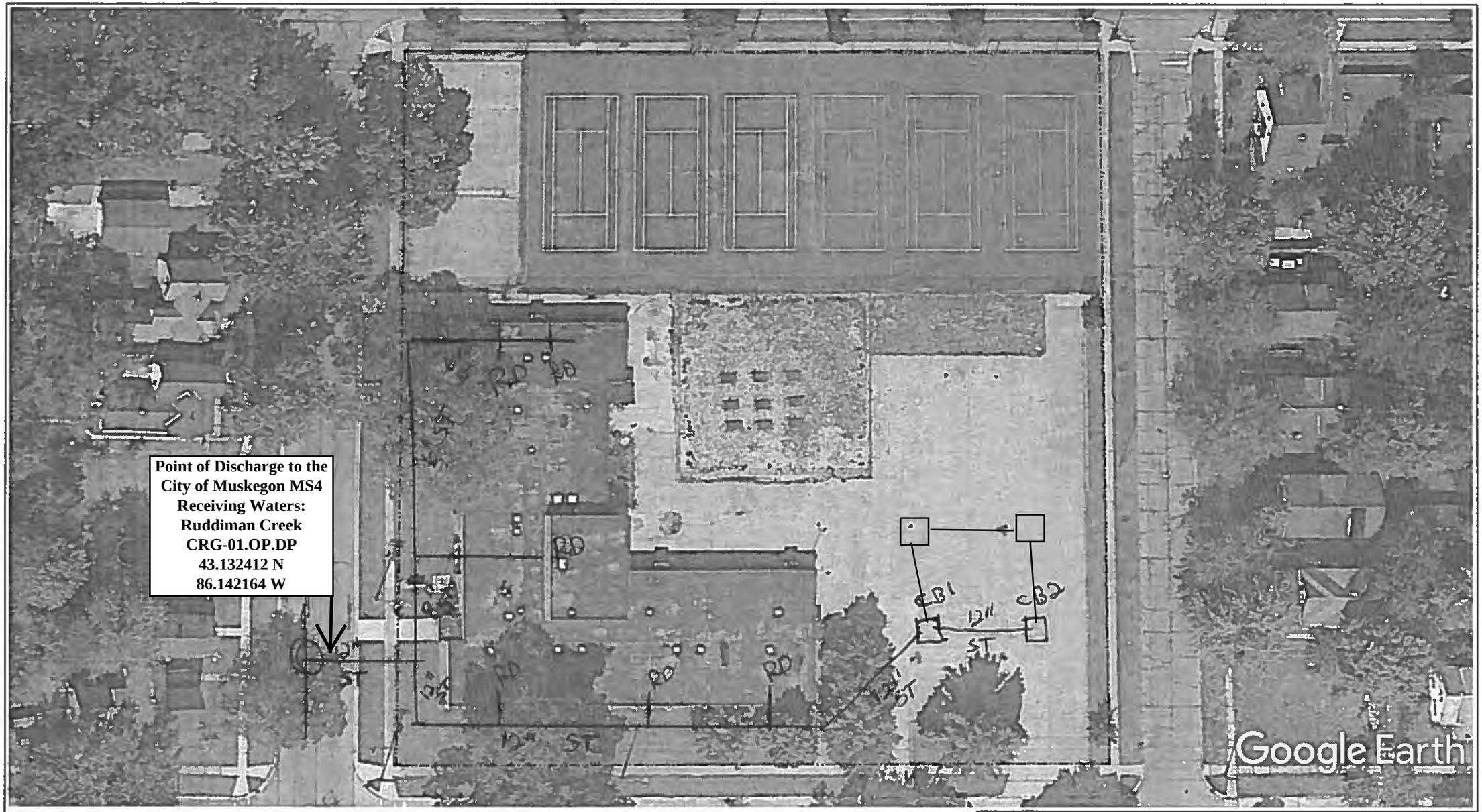
FACILITY	Point of Discharge	Point of Discharge/Outfall	RECEIVING WATERS	WATERSHED
Craig School (Closed)	CRG-01.OP.DP	Point of Discharge	Ruddiman Creek	Muskegon River
Glenside Early Childhood Center	GLN-01.CB.DP	Point of Discharge	Ruddiman Creek	Muskegon River
	GLN-02.CB.DP	Point of Discharge	Ruddiman Creek	Muskegon River
	GLN-03.OP.DP	Point of Discharge	Ruddiman Creek	Muskegon River
	GLN-04.CB.DP	Point of Discharge	Ruddiman Creek	Muskegon River
Hackley Administration	HAB-01.CB.DP	Point of Discharge	Ryerson Creek	Muskegon River
	HAB-03.MH.DP	Point of Discharge	Ryerson Creek	Muskegon River
	HAB-04.CB.DP	Point of Discharge	Ryerson Creek	Muskegon River
Lakeside Elementary	LES-01.OP.DP	Point of Discharge	Ruddiman Creek	Muskegon River
	LES-02.CB.DP	Point of Discharge	Ruddiman Creek	Muskegon River
Maintenance & Transportation Building (District Service Building)	MMT-01.CB.DP	Point of Discharge	Little Black Creek	Black Creek
Marquette Elementary	MQT-03.CB.DP	Point of Discharge	Ryerson Creek	Muskegon River
	MQT-09.MH.DP	Point of Discharge	Ryerson Creek	Muskegon River

Muskegon Public Schools
Receiving Waters Table

FACILITY	Point of Discharge	Point of Discharge/Outfall	RECEIVING WATERS	WATERSHED
Marquette Elementary CONT.	MQT-11.CB.DP	Point of Discharge	Ryerson Creek	Muskegon River
	MQT-18.CB.DP	Point of Discharge	Ryerson Creek	Muskegon River
	MQT-19.OP.DP	Point of Discharge	Ryerson Creek	Muskegon River
Moon Elementary	MOO-01.CB.DP	Point of Discharge	Ruddiman Creek	Muskegon River
	MOO-02.CB.DP	Point of Discharge	Ruddiman Creek	Muskegon River
	MOO-03.OP.DP	Point of Discharge	Ruddiman Creek	Muskegon River
	MOO-04.CB.DP	Point of Discharge	Ruddiman Creek	Muskegon River
	MOO-08.CB.DP	Point of Discharge	Ruddiman Creek	Muskegon River
Muskegon Community Education Center (MCEC)	MAE-01.OP.DP	Point of Discharge	Ryerson Creek	Muskegon River
	MAE-05.CB.DP	Point of Discharge	Ryerson Creek	Muskegon River
Muskegon High School	MHS-01.OP.DP	Point of Discharge	Ruddiman Creek	Muskegon River
	MHS-02.CB.DP	Point of Discharge	Ruddiman Creek	Muskegon River
	MHS-03.MH.DP	Point of Discharge	Ruddiman Creek	Muskegon River

Muskegon Public Schools
Receiving Waters Table

FACILITY	Point of Discharge	Point of Discharge/Outfall	RECEIVING WATERS	WATERSHED
Muskegon High School CONT.	MHS-04.CB.DP	Point of Dischage	Ruddiman Creek	Muskegon River
	MHS-05.OP.DP	Point of Discharge	Ruddiman Creek	Muskegon River
	MHS-06.CB.DP	Point of Dischage	Ruddiman Creek	Muskegon River
Muskegon Middle School	MMS-01.CB.DP	Point of Discharge	Ryerson Creek	Muskegon River
	MMS-02.CB.DP	Point of Discharge	Ryerson Creek	Muskegon River
Nelson Elementary	NES-01.MH.DP	Point of Discharge	Muskegon Lake	Muskegon River
	NES-02.CB.DP	Point of Discharge	Muskegon Lake	Muskegon River
Oakview Elementary	OAK-01.MH.DP	Point of Discharge	Ryerson Creek	Muskegon River
	OAK-02.MH.DP	Point of Discharge	Ryerson Creek	Muskegon River



1580 Park St., Muskegon, MI 49441

-·-·- = Property Line

North

Craig School

Muskegon Public Schools

crdh environmental group
37720 Interchange Drive
Farmington Hills, MI 48335
Phone: 248-426-0165
Fax: 248-427-0305

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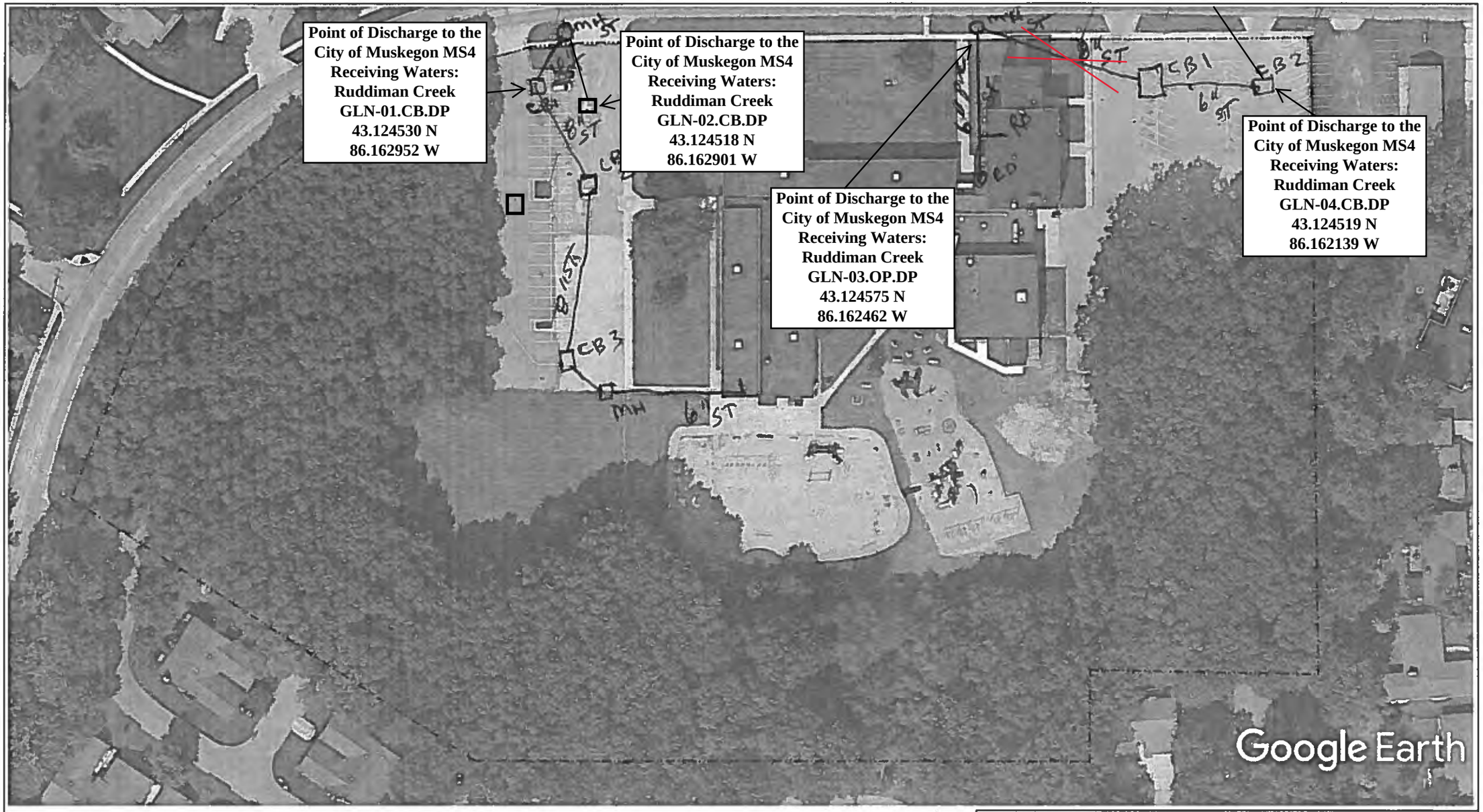

1213 W. Hackley Ave, Muskegon, MI 49441

-·-·- = Property Boundary

North

Glenside Elementary School

Muskegon Public Schools

37720 Interchange Drive
Farmington Hills, MI 48335
Phone 248-426-0165
Fax: 248-427-0305
environmental group

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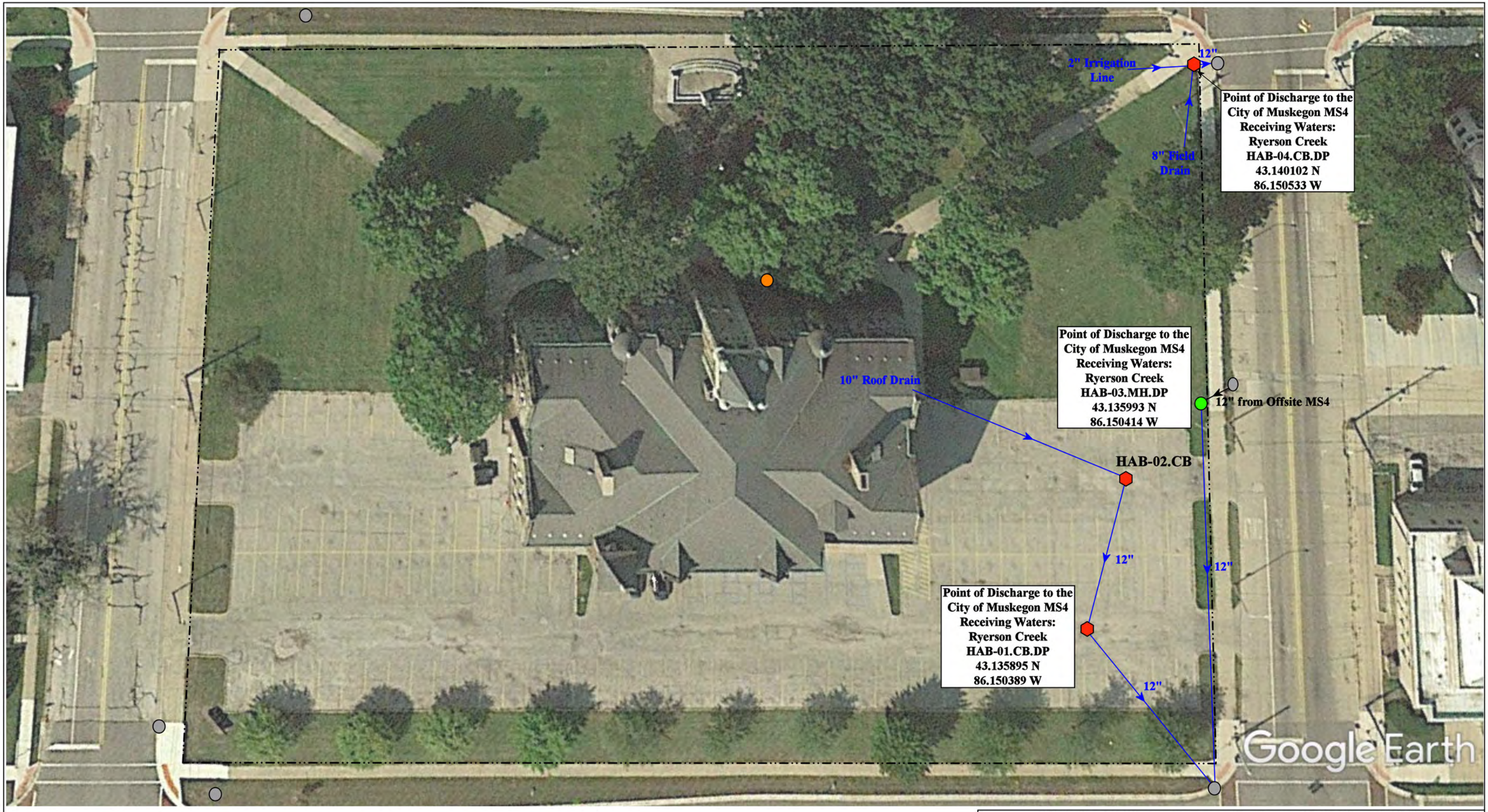

= Property Boundary
= Catch Basin
= Manhole
= City of Muskegon MS4
= Sanitary

North

349 West Webster Avenue, Muskegon, Michigan 49440

Hackley Administration Building

Muskegon Public Schools

37720 Interchange Drive
Farmington Hills, MI 48335
Phone: 248-426-0165
Fax: 248-427-0305

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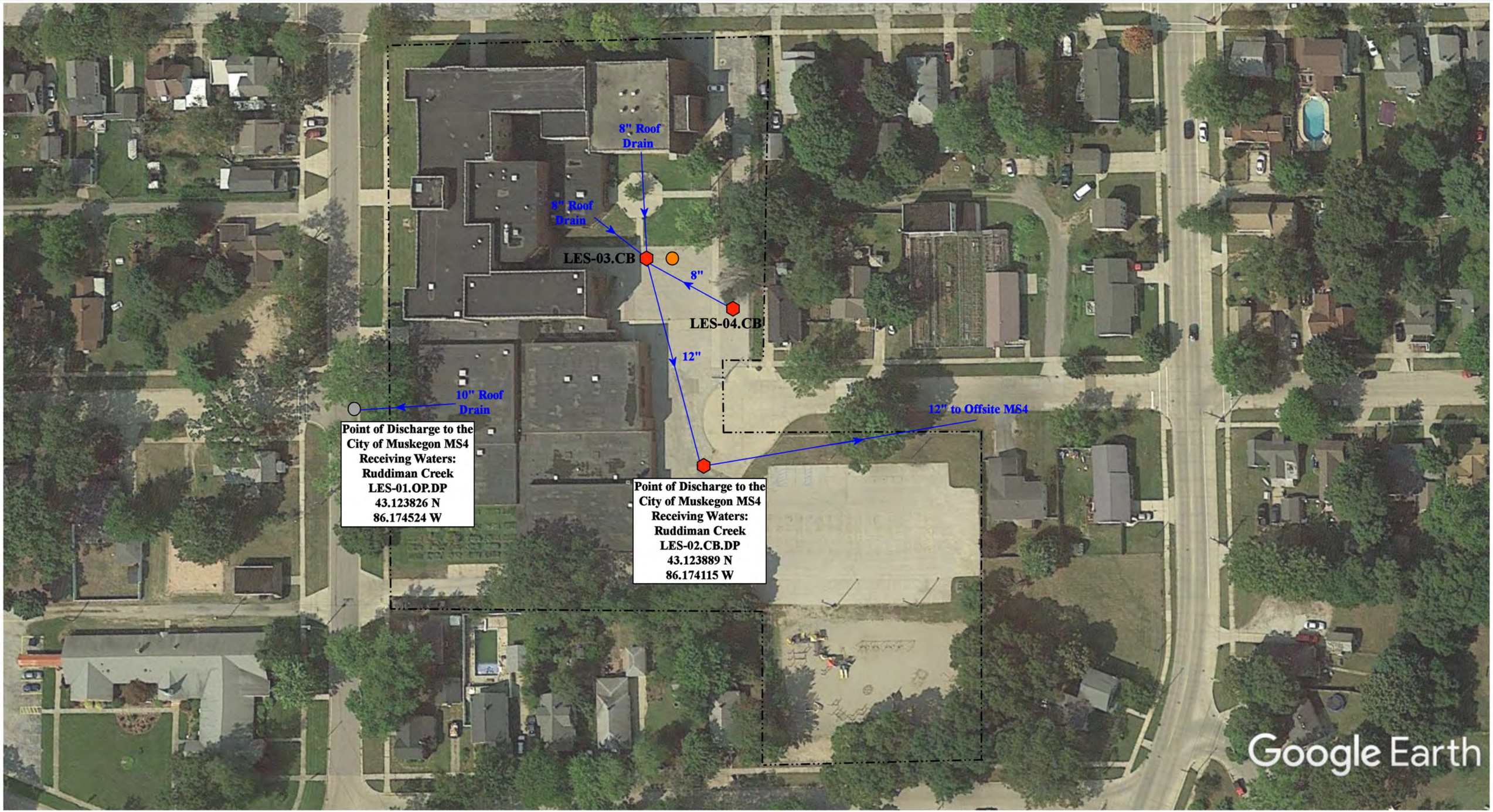

-·-·- = Property Boundary

= Sanitary

= Catch Basin

= City of Muskegon MS4

North

2312 Denmark Street, Muskegon, Michigan 49441

Lakeside Elementary School

Muskegon Public Schools

37720 Interchange Drive
Farmington Hills, MI 48335
Phone: 248-426-0165
Fax: 248-427-0305

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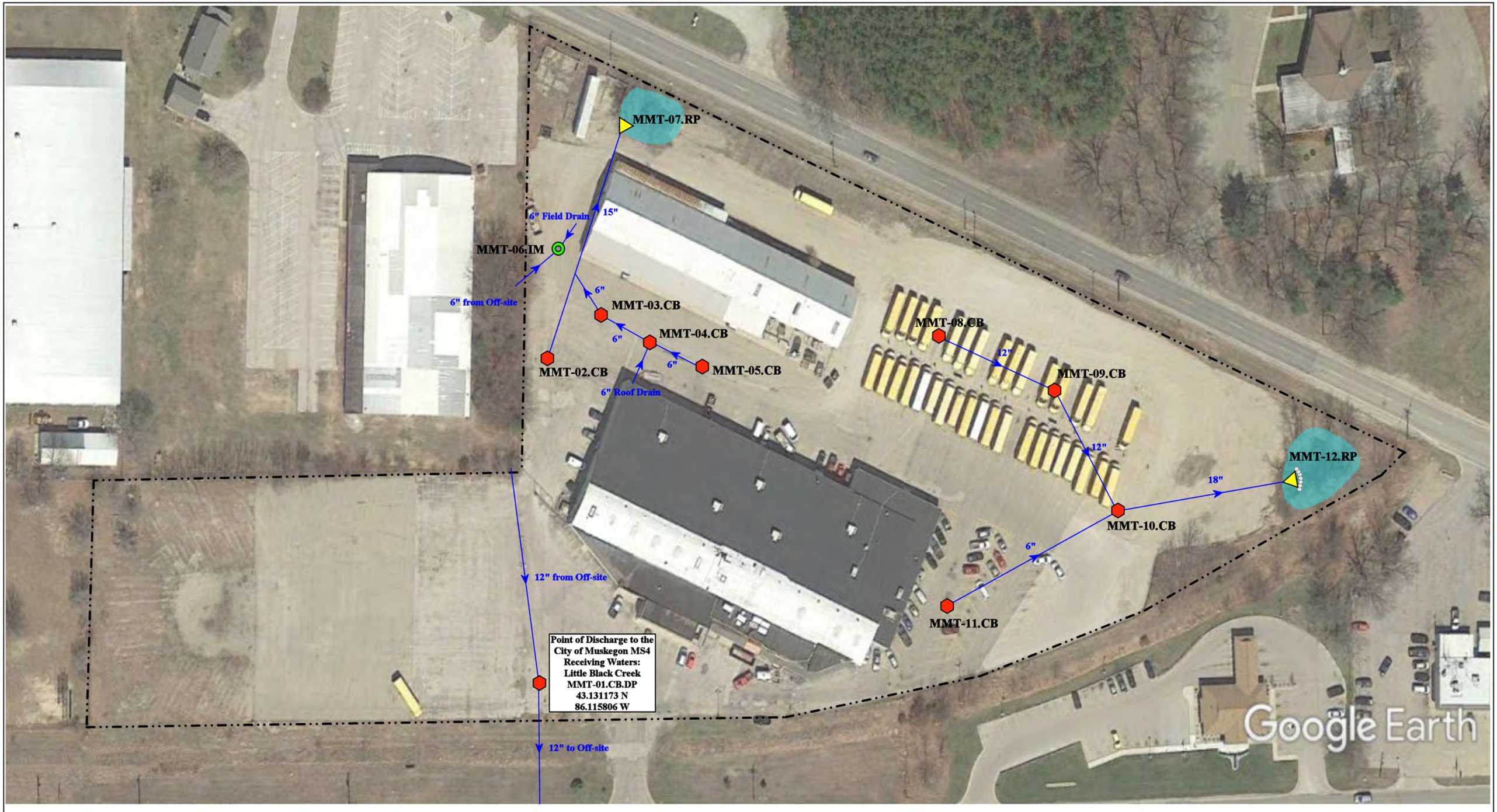

= Catch Basin

= Infiltration Manhole

= Open Pipe Outlet

= Rip-Rap

= Property Lines

North

1800 East Laketon Avenue, Muskegon, Michigan 49442

Maintenance & Transportation Building

Muskegon Public Schools

environmental group

37720 Interchange Drive
Farmington Hills, MI 48335
Phone: 248-426-0165
Fax: 248-427-0305

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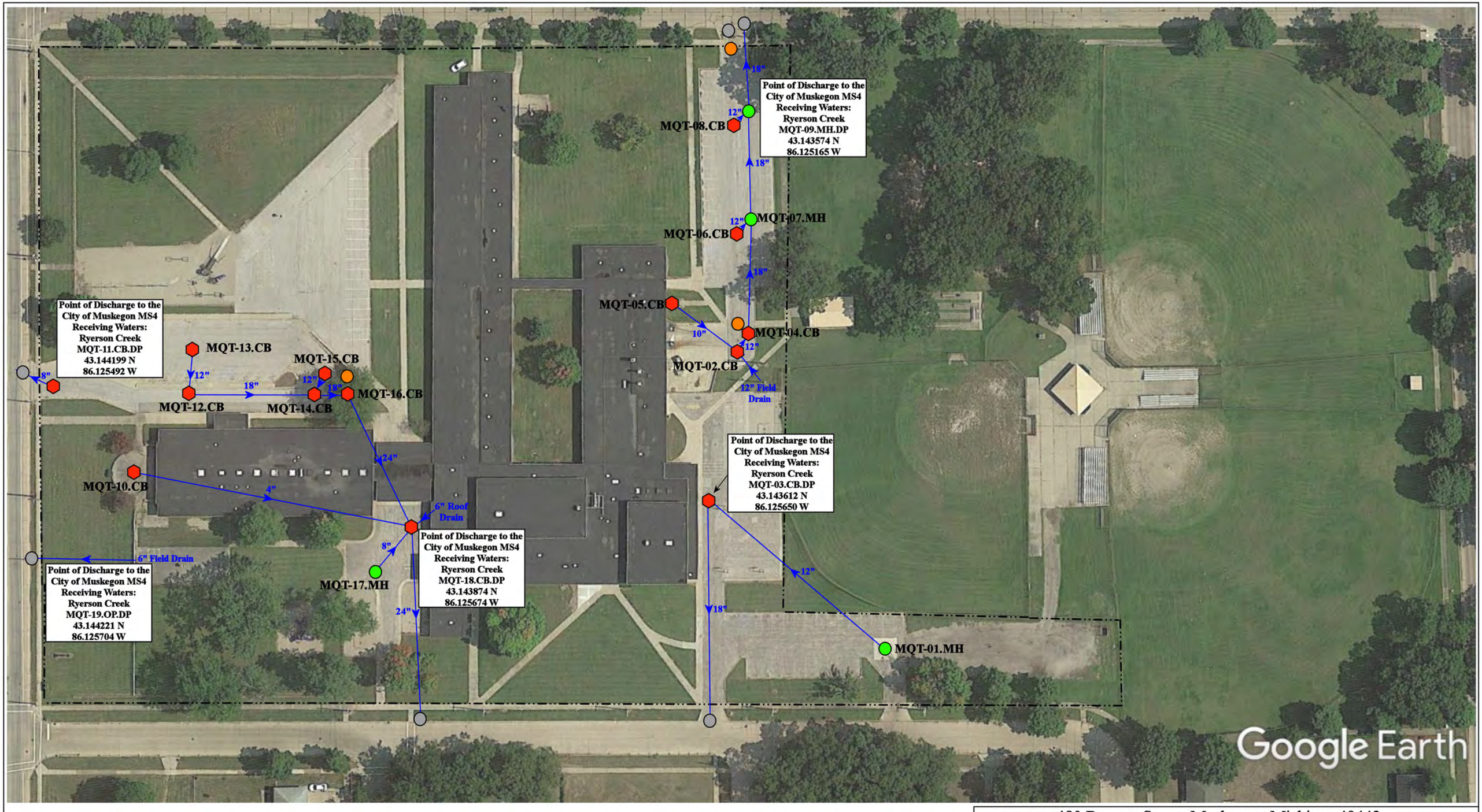

480 Bennett Street, Muskegon, Michigan 49442

= Property Boundary
= Catch Basin
= Manhole
= City of Muskegon MS4
= Sanitary

North

Marquette Elementary School

Muskegon Public Schools

37720 Interchange Drive
Farmington Hills, MI 48335
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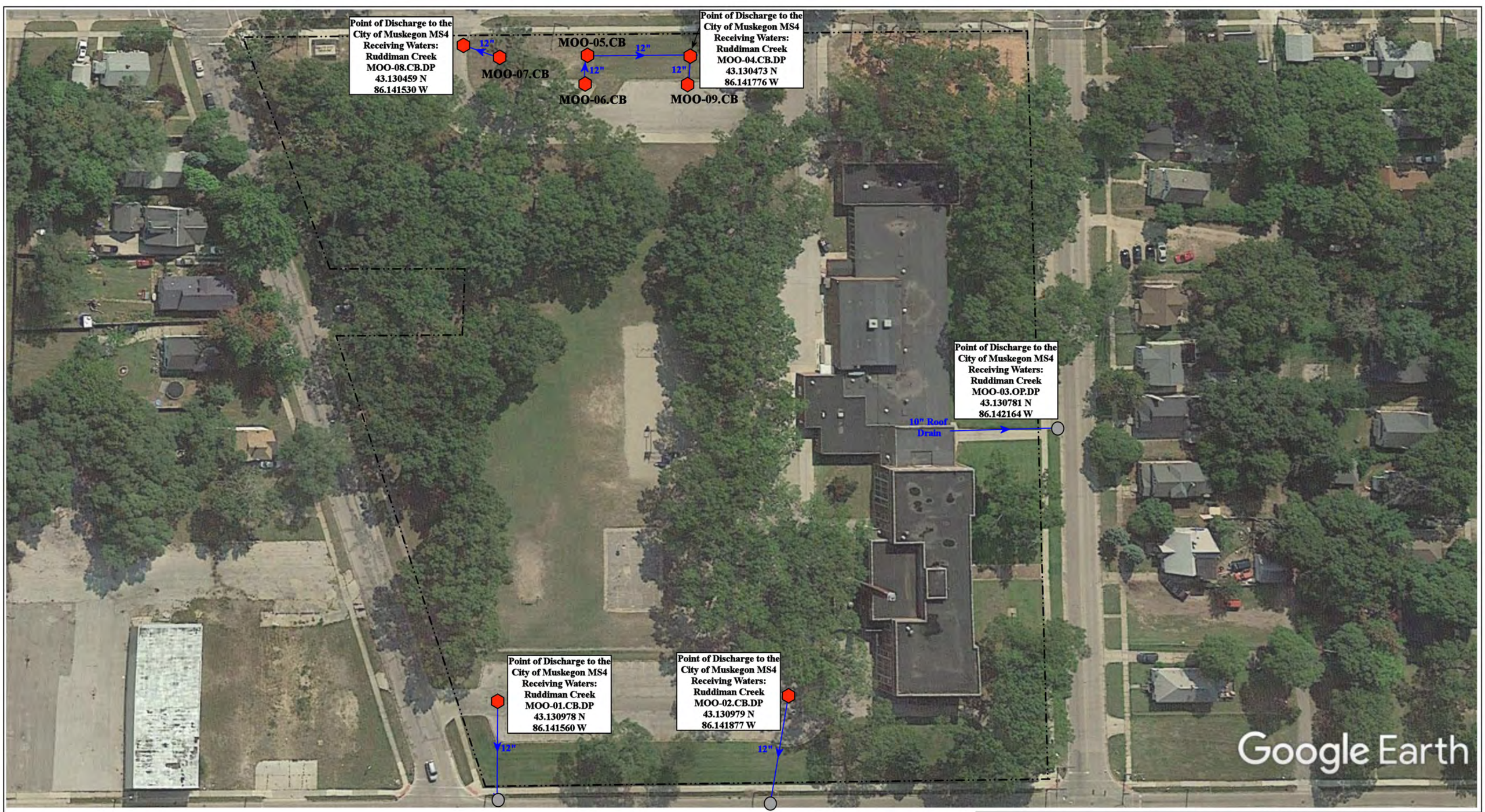

1826 Hoyt Street, Muskegon, Michigan 49442

= Property Boundary

= Catch Basin

= City of Muskegon MS4

North

Moon Elementary School

Muskegon Public Schools

37720 Interchange Drive
Farmington Hills, MI 48335
Phone: 248-426-0165
Fax: 248-427-0305

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571 Apple Avenue, Muskegon, Michigan 49442

= Catch Basin

= Groundwater Sump

= City of Muskegon MS4

= Property Lines

North

Muskegon Community Education Center

Muskegon Public Schools

environmental group

37720 Interchange Drive
Farmington Hills, MI 48335
Phone: 248-426-0165
Fax: 248-427-0305

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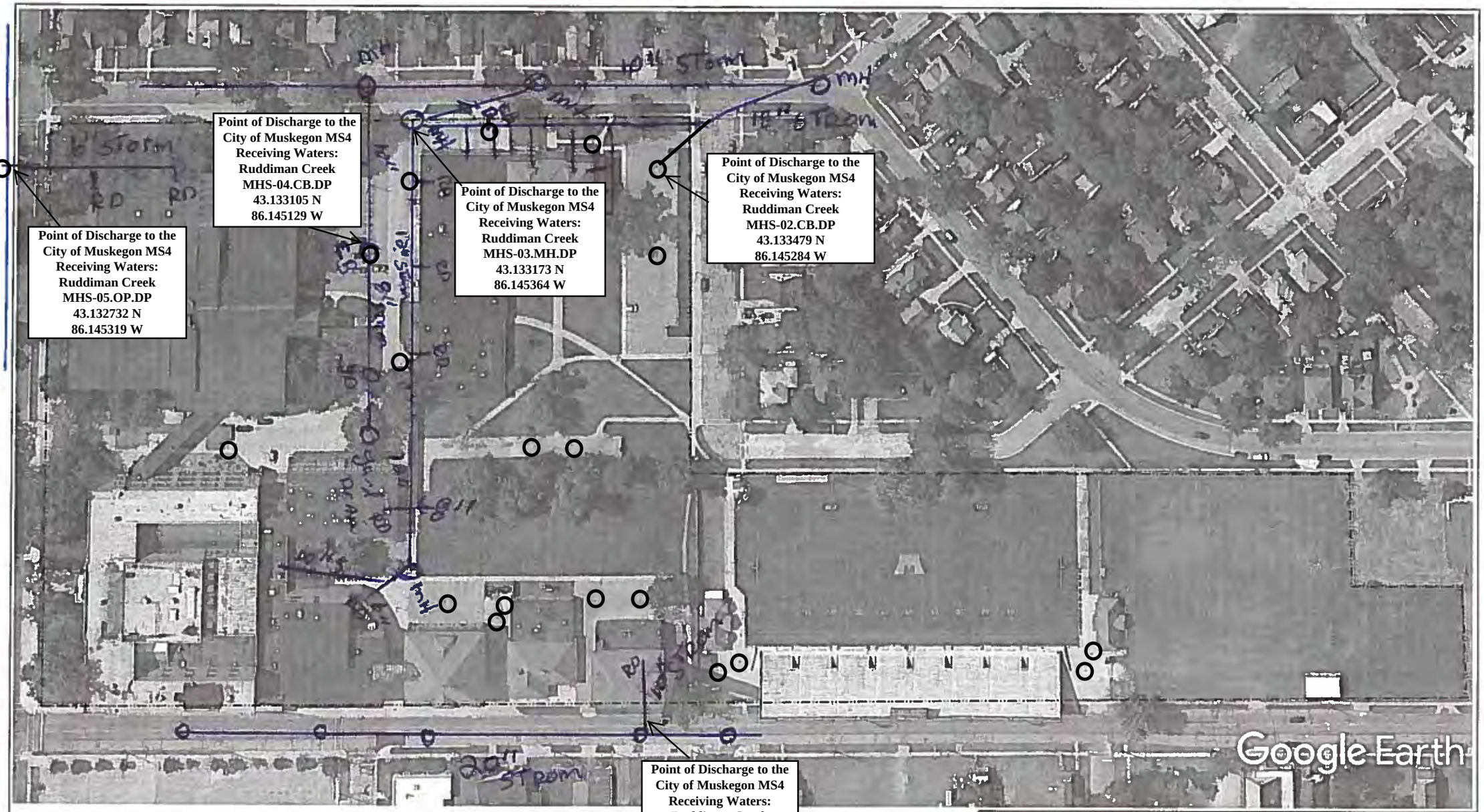

= Property Boundary

North

80 W. Southern Ave., Muskegon, MI 49441

Muskegon High School

Muskegon Public Schools

37720 Interchange Drive
Farmington Hills, MI 48335
Phone: 248-426-0165
Fax: 248-427-0305

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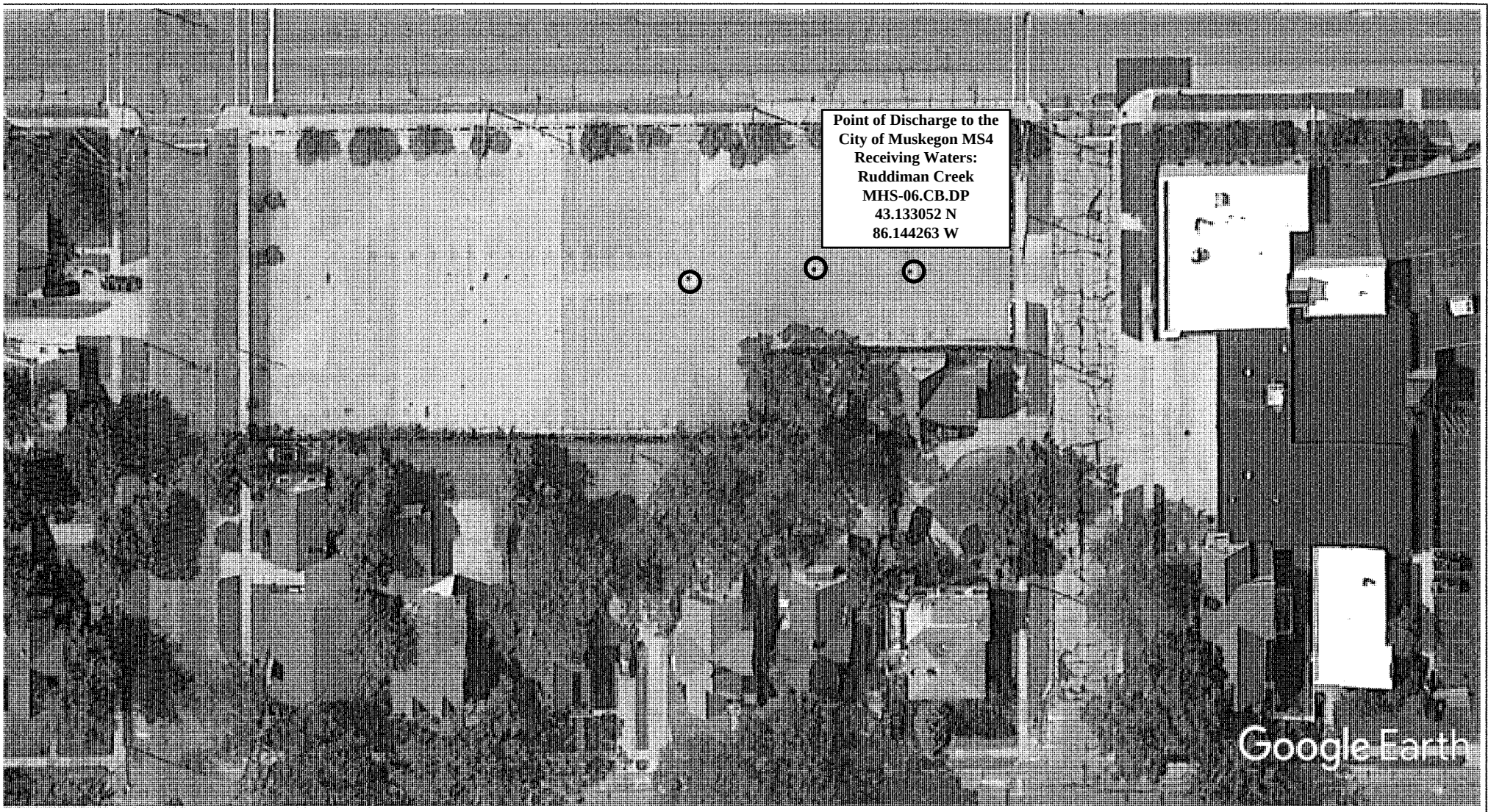

= Property Boundary

North

80 W. Southern Ave., Muskegon, MI 49441

Muskegon High School

Muskegon Public Schools

environmental group
37720 Interchange Drive
Farmington Hills, MI 48335
Phone: 248-426-0165
Fax: 248-427-0305

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Reviewed:	LK
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= **Property Boundary**

North

80 W. Southern Ave., Muskegon, MI 49441

Muskegon High School

Muskegon Public Schools

37739 Interchange Drive
Farmington Hills, MI 48335
Phone: 248-426-0343
Fax: 248-427-0343

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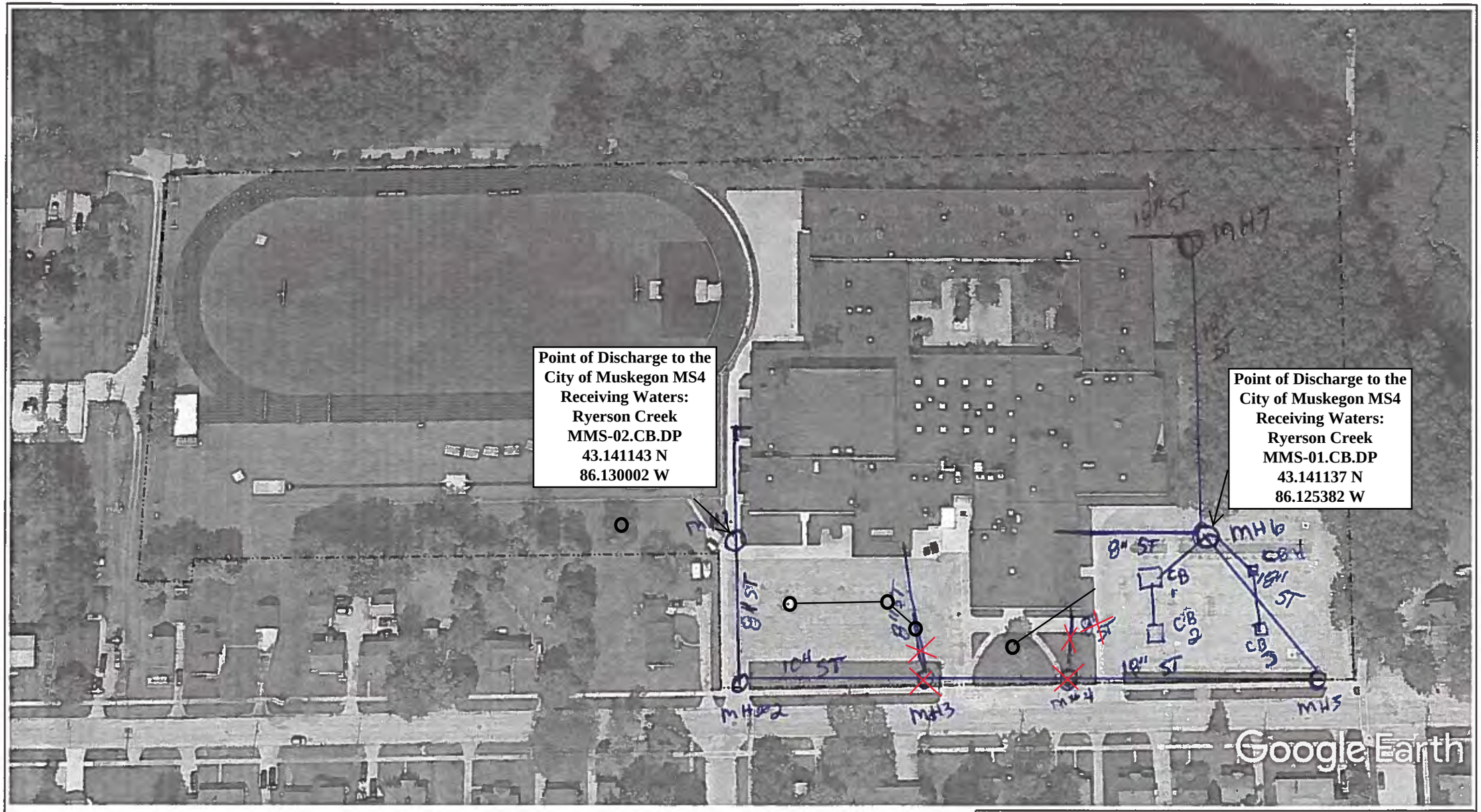

1150 Amity Ave., Muskegon, MI 49442

-·-·- = Property Boundary

North

Muskegon Middle School

Muskegon Public Schools

orchard, hiltz & mccliment inc.
environmental group
37720 Interchange Drive
Farmington Hills, MI 48335
Phone: 248-426-0165
Fax: 248-427-0305

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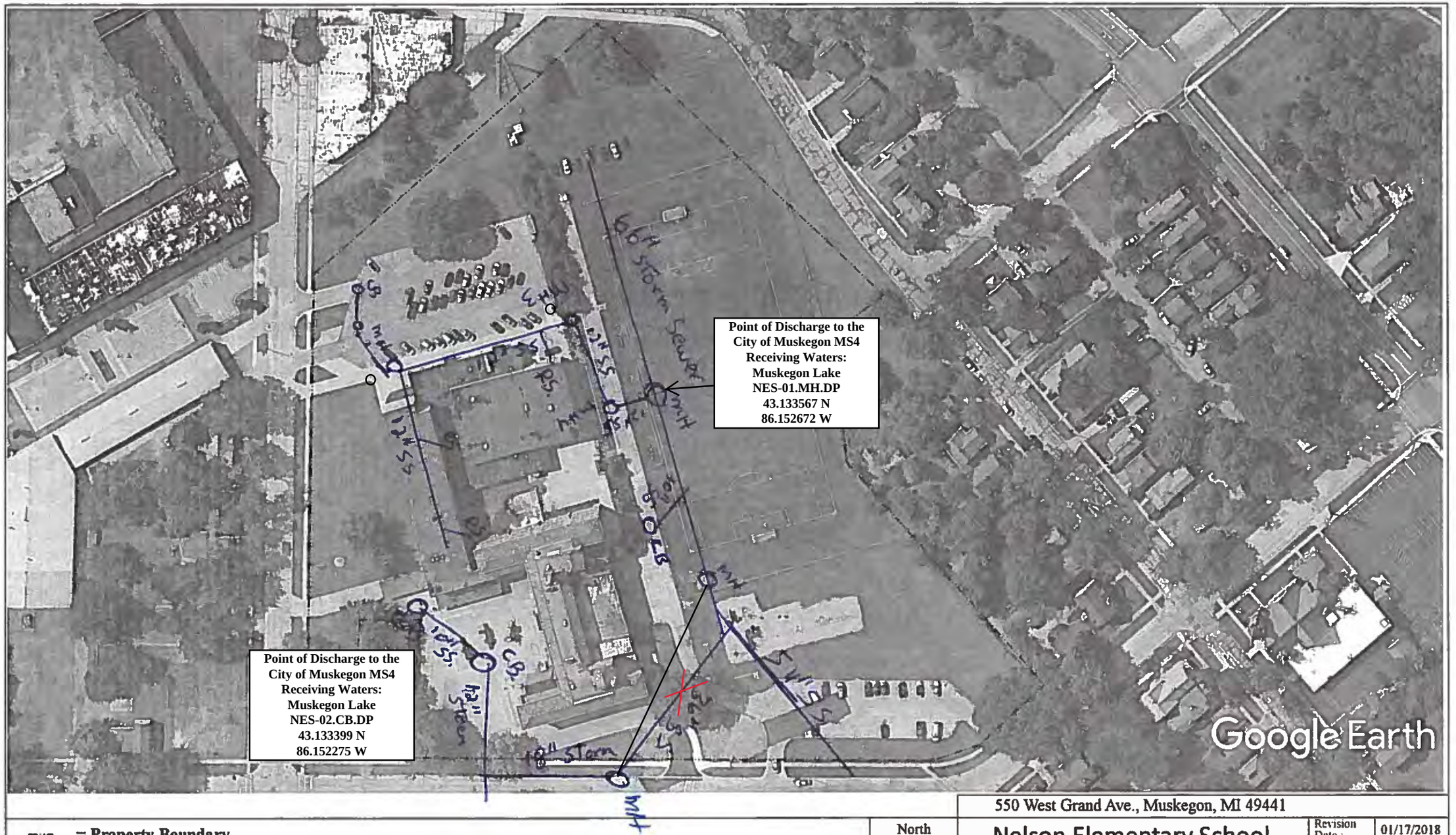

-·-·- = Property Boundary

North

550 West Grand Ave., Muskegon, MI 49441

Nelson Elementary School

Muskegon Public Schools

37720 Interchange Drive
Farmington Hills, MI 48335
Phone: 248-426-0165
Fax: 248-427-0305
environmental group

Revision Date:	01/17/2018
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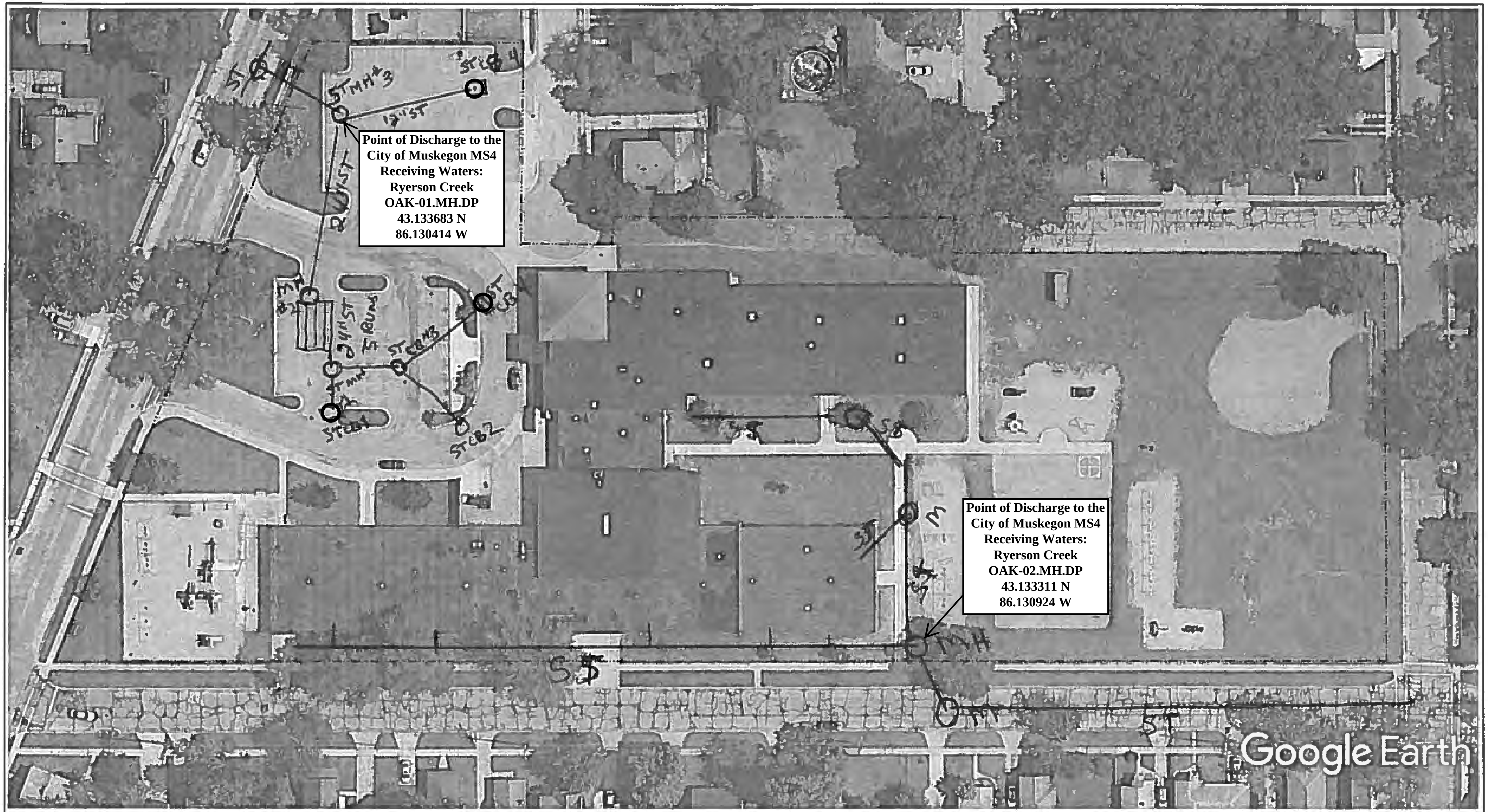

1420 Madison St., Muskegon, MI 49442

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North

Oakview Elementary School

Muskegon Public Schools

environmental group
37720 Interchange Drive
Farmington Hills, MI 48335
Phone: 248-426-0165
Fax: 248-427-0305

Revision Date	01/17/2018
Drawn by	BJZ
Reviewed	LK
Page #	1 of 1
Scale	Not to Scale

Appendix "B"

School Board Policy Resolution, Post Construction Stormwater Runoff Program Policy and Procedures

&

Municipal Separate Storm Sewer System Noncompliance Enforcement Tracking Sheet

Created: September 15, 2017
Revision Date: June 27, 2018

Municipal Separate Storm Sewer System Noncompliance Enforcement Tracking
Muskegon Public Schools

Report Number	Name	Date	Location of Violation	Business/ Organization	Description of Violation	Description of Enforcement Response	Compliance Schedule Date	Date Violation Resolved
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								

Post-Construction Stormwater Runoff Program Policy & Procedures

Muskegon Public Schools

Muskegon, Michigan

April 1, 2017

Prepared By:

environmental group
37720 Interchange Drive
Farmington Hills, Michigan 48335

Table of Contents

1.0 PURPOSE AND OVERVIEW

Prevention of pollution from stormwater runoff and the protection of the quality of the waters of the State of Michigan are of utmost importance to the Muskegon Public Schools (MPS). MPS currently owns and operates separate storm sewer systems that discharge to surface waters or other municipal storm sewer systems (MS4) and will be covered under a NPDES Permit issued to MPS by the Michigan Department of Environmental Quality (MDEQ).

The post-construction stormwater run-off controls are necessary to maintain or restore stable hydrology in receiving waters by limiting surface runoff rates and volumes and reducing pollutant loadings from sites that undergo development or significant redevelopment.

This policy is to establish the post construction stormwater runoff control standards. The objects of this program and associated procedures are to:

a. Develop and implement regulatory mechanisms to address post-construction stormwater runoff for new development and redevelopment projects, including preventing or minimizing water quality impacts.
b. Develop and implement regulatory mechanisms for projects that disturb one or more acre, including projects less than an acre that are part of a larger common plan of development or sale and discharge into the applicants MS4.
c. Ensure post construction controls to minimize water quality impacts by following water quality treatment standards.
d. Require that BMP's be designed on a site-specific basis to reduce post-development total suspended solids loading.
e. Procedure to meet water quality treatment and channel protection standards of new development or redevelopment projects.
f. Address "hot spots".
g. Submit site development plans for review and approval.
h. Require adequate long-term operation and maintenance of BMPs by ordinance or other regulatory means.

MPS has developed a board policy resolution to direct compliance with these requirements. In addition to the board policy resolution, the following sections identify specific actions to be taken by MPS to ensure compliance with the applicable standards. The board resolution is provided in Section 7.0 and is to be passed by 2018.

2.0 WATER QUALITY TREATMENT PERFORMANCE STANDARD

This policy is to establish MPS goal to include water quality treatment volume standards for each new construction or redevelopment of projects where the area of disturbance exceeds one (1) acre as required by the MDEQ NPDES Phase II Stormwater Discharge Permit. One or more of the following treatment standards should be included:

1. Treat the first one inch of runoff from the area of new construction or redevelopment, or
2. Treat the runoff generated ninety percent (90%) of all runoff-producing storms for the project site.

The source of the rainfall data for the water quality treatment standard of requiring the treatment of the runoff generated from the ninety percent (90%) of all runoff-producing storms is:

- The MDEQ memo dated March 24, 2006, which is available via the internet at http://www.michigan.gov/documents/deq/wrd-hsu-ninety-percent_557709_7.pdf

Treatment methods shall be designed on a site-specific basis to achieve the following:

1. A minimum of eighty percent (80%) removal of total suspended solids (TSS), as compared with uncontrolled runoff, or
2. Discharge concentrations of TSS not to exceed 80 milligrams per liter (80mg/L).

A minimum treatment volume standard is not required where site conditions are such that TSS concentrations in stormwater discharges will not exceed 80mg/L.

Treatment methods shall be designed on a site specific basis to reduce the discharge of sedimentation or TSS from the site. Such methods may include:

1. Stand pipe filters in storm water detention basins
2. Sediment filter tanks
3. Catch basin sumps
4. Aqua-Swirls®
5. Treatment trains
6. Rain Gardens
7. Pervious pavement systems

See the following graphic examples of treatment options.

Sample school site showing green space and infiltration areas

3.0 CHANNEL PROTECTION PERFORMANCE STANDARD

This policy is to establish MPS goal to address runoff rate and volume of discharges as required by the MDEQ NPDES Phase II Stormwater Discharge Permit.

MPS understands that channel protection criteria are necessary to maintain post-development stormwater runoff volumes and peak flow rates at or below existing levels for all storms up to the 2-year, 24-hour event. "Existing Levels" means the runoff volume and peak flow rate for the last land use prior to the planned new development or redevelopment.

Where more restrictive channel protection criteria already exist, or are needed to meet the goals of reducing runoff volume and peak flows to less than existing levels on lands being developed or redeveloped, MPS will consider use of the more restrictive criteria rather than the standard permit requirements.

A post-construction stormwater runoff program compliance assistance document is available via the internet at www.michigan.gov/documents/deq/wrd-storm-MS4-ComplianceAssistance_470350_7.pdf.

Before channel protection

With channel protection

4.0 SITE SPECIFIC CRITERIA

This policy is to establish MPS's goal to establish site specific requirements as required by the MDEQ NPDES Phase II Stormwater Discharge Permit. Because each site has its' own special circumstances and conditions, the following BMPs will be used as appropriate according to site conditions.

- Reduce runoff from the site to greatest extent possible (provide holding basins, divert water through grassed swales).
- Prevent spills and discharges.
- Control waste such as building materials, concrete washout, chemicals, litter, and sanitary waste.
- Phasing will be considered to limit amount of exposed soils.
- Interim soils stabilization methods are to be considered (temporary seeding, mulching etc.).
- Buffer preservation (avoid exposing soils to property limits).
- Inspection staff will be trained in the proper maintenance and operation of Soil Erosion and Silt Prevention measures.

MPS will review construction plans for sites with known soil and/or groundwater contamination, including potential "hot spots" and evaluate the use of infiltration BMPs to meet water quality treatment and channel protection criteria. Hot spots include areas with the potential for significant pollutant loading such as vehicle service and maintenance facilities, vehicle equipment cleaning facilities, fleet storage areas for buses, and outdoor liquid container storage.

Additional water quality standards or pretreatment measures may be required in addition to those included in the water quality criteria in order to remove potential pollutant loadings from entering either groundwater or surface water systems.

Pretreatment measures include:

Stormwater Hot Spots	Minimum Pre-Treatment Options
Vehicle service and maintenance facilities	1. Oil/Water Separators/Hydrodynamic Devices. 2. Use of Drip Pans and/or Dry Sweep Material under Vehicles/Equipment 3. Use of Absorbent Devices to Reduce Liquid Releases 4. Spill Prevention Response Program
Fleet storage areas for buses	BMPs that are part of a Stormwater Pollution Prevention Plan (SWPPP)
Vehicle Fueling Stations	1. Oil/Water Separators/Hydrodynamic Devices 2. Water Quality Inserts for Inlets 3. Spill Prevention Response Program
Vehicle equipment cleaning facilities	BMPs that are part of a Stormwater Pollution Prevention Plan (SWPPP)
Outdoor liquid container storage	Spill Prevention Response Program

5.0 SITE PLAN REVIEW

This policy is to establish requirement to submit a site plan for review as required by the MDEQ NPDES Phase II Stormwater Discharge Permit. MPS will prepare and submit a written application, including a site plan for review and approval of post-construction stormwater runoff BMPs, for all new construction or redevelopment projects where the area of disturbance exceeds one (1) acre. The application will be completed in a form and manner as prescribed by the local municipality or governing unit in which the property is located. The site plan will be reviewed by the appropriate local municipal, county, state or other governmental agency. The review of the stormwater site plan will provide local municipal, county, state or other governmental agency with the ability to ensure that water quality objectives, erosion and sediment control requirements, and BMP maintenance are adequately considered.

The goal of the site plan review is to:

1. Minimize clearing and grading.
2. Protect waterways.
3. Limit soil exposure.
4. Protect steep slopes and cuts.

6.0 SUMMARY

MPS is committed to practicing sound stormwater management practices and to observance and adherence to all local, state and federal stormwater policies to the greatest extent possible. MPS strives to be a good steward of the lands and waterways located within its jurisdiction. The goal of this *"Post-Construction Stormwater Runoff Program, Policy & Procedures"* resolution is to implement and enforce a program to minimize stormwater discharges and to improve the water quality into the drainage system from new and redevelopment projects.

7.0 BOARD RESOLUTION

MUSKEGON Public Schools

Strong Schools, Stronger Communities.

Administration Building • 349 West Webster Avenue • Muskegon, MI 49440 • (231) 720.2000 • fax 231 | 720 2050

BOARD RESOLUTION IN SUPPORT OF
THE STORMWATER MANAGEMENT PLANT
#1718-05

At a regular meeting of the Board of Education meeting of the Public Schools of the City of Muskegon on August 22, 2017, the following preamble and resolution were moved by Billie Bruce , and supported by Lynnette Marks :

WHEREAS: The district wishes for Board to support the Resolution in Support of the Stormwater Management Plant. This Board Resolution is used in place of an ordinance and includes specific language required. The actions outlined in the Board Resolution are the same actions the District already committed to when submitting the application and Stormwater Management Plan to receive the authorization to discharge.

NOW THEREFORE, IT IS RESOLVED THAT: The Board Supports the Stormwater Management Plant Resolution

Roll Call Vote:

AYES: 7

NAYS: 0

Motion Declared Adopted.

Secretary, Board of Education

Muskegon Public Schools
Board of Education
Resolution in Support of Stormwater Management Plan

WHEREAS, Muskegon Public Schools owns and operates facilities within the boundaries of the Muskegon urbanized area which discharges stormwater though a municipal separate storm sewer system (MS4) to surface waters of the State of Michigan; and

WHEREAS, The Michigan Department of Environmental Quality – Water Bureau maintains oversight and regulatory authority for compliance with the terms and conditions of the NPDES Municipal Separate Storm Sewer System discharge permit; and

WHEREAS, Muskegon Public Schools has applied for permit coverage to discharge stormwater from Muskegon Public Schools facilities to the MS4; and

WHEREAS, Muskegon Public Schools agrees to comply with the NPDES Municipal Separate Storm Sewer System discharge permit requirements, and

WHEREAS, Muskegon Public Schools has developed a Stormwater Management Program Plan (SWMP) outlining the policies, procedures, and best management practices to be employed by the district to comply with the permit requirements, and

WHEREAS, the conditions of the NPDES Municipal Separate Storm Sewer System discharge permit require Muskegon Public Schools to develop policies and procedures that prohibit illicit discharges to their stormwater system and to implement appropriate enforcement procedures and actions to detect and eliminate such illicit discharges, and

WHEREAS, Muskegon Public Schools agrees to prohibit the discharge of non-stormwater discharges into the storm drain system, including but not limited to pollutants or waters containing any pollutants, and

WHEREAS, Muskegon Public Schools agrees to eliminate illicit discharges and illicit connections, and

WHEREAS, Muskegon Public Schools agrees to prohibit the construction, use, maintenance or continued existence of illicit connections to the storm drain system. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection, and

WHEREAS, Muskegon Public Schools agrees to obtain a Part 91 permit from the appropriate state, county, or local governmental soil erosion permitting agency for new development and redevelopment projects that disturb one or more acres, and

WHEREAS, Muskegon Public Schools agrees to obtain a construction site permit from the local municipality or other governing unit for new development and redevelopment projects that disturb one or more acres, and

WHEREAS, Muskegon Public Schools agrees to inspect, operate, and maintain structural controls for the purpose of reducing pollutant contribution, control runoff, and decrease or eliminate stream bank erosion due to stormwater runoff, and

WHEREAS, Muskegon Public Schools agrees to comply with the requirements of the State of Michigan Permit (Rule 323.2190) for stormwater discharge from construction activity.

THEREFORE, be it resolved that the Muskegon Public Schools Board of Education is highly committed to practicing sound environmental principals including the reduction of pollutants to surface waters though discharges of stormwater. The Board hereby approves and instructs the district Superintendent to enforce the above listed policies and procedures for illicit discharge elimination, control of stormwater runoff and long-term operation and maintenance of structural controls as part of the overall Muskegon Public School's Stormwater Management Program Plan.

Appendix "C"

SEMCOG Posters

Created: September 15, 2017
Revision Date: June 27, 2018

How to Spot Illicit Discharges

Sanitary Sewer Discharge Observations:

- Sanitary Debris
- Staining on pipe
- Heavy Foam
- Gray or Discolored Water
- Odors (sewage, chlorine, rotten eggs and detergents)



Illegal Dumping, Spills, or Floor Drain Connection Observations:

- Oily Sheen
- Trash, non-sanitary debris
- Petroleum odors
- Stained sediment, rocks, and vegetation
- Vehicle bay washout


Agricultural Runoff, Fertilizers, or Sanitary Sewer Waste Observations:

- Algae growth at or near outlet
- Heavy vegetation at or near outlet


What to Report

- **Spills and Contamination to lakes, river and streams**
  District Stormwater Coordinator, MDEQ, Environmental Health Department, Drain Commissioner's Office
- **Suspicious dumping or discharges from pipes**
  District Stormwater Coordinator, MDEQ, Environmental Health Department, Drain Commissioner's Office
- **Sewage on the ground or in surface water**
  District Stormwater Coordinator, Environmental Health Department
- **Large number of dead fish in waterways**
  District Stormwater Coordinator, MDEQ, Environmental Health Department
- **Failing or leaking septic systems**
  District Stormwater Coordinator, Environmental Health Department
- **Construction site soil erosion to waterways**
  District Stormwater Coordinator, local SESC Enforcing Agency
- **Polluted runoff from storage piles/dumpsters entering waterways**
  District Stormwater Coordinator, Environmental Health Department, Drain Commissioner's Office

Important Numbers

Emergency Call 9-1-1

- Pollution Emergency Alerting System (PEAS) **1-800-292-4706**
- 24 Hour Spill Hot Line – Arch Environmental Group **1-248-522-2821**

Non-Emergency

- School District Contact Number _____
- DEQ Environmental Assistance Center **1-800-662-9278**
- Eaton County Drain Commissioner **1-800-292-4706**
- Genesee County Drain Commissioner **1-810-732-2940**
- Livingston County Department of Public Health **1-517-546-9858**
- Macomb County Public Works **1-877-679-4357**
- Oakland County Water Resources **1-248-858-0958**
- Washtenaw County Drain Commissioner **1-724-222-6860**
- Wayne County Department of the Environment **1-888-223-2363**

Seven Simple Steps to Clean Water

Our Water. Our Future.

Ours to Protect

1. Help keep pollution out of storm drains

2. Fertilize sparingly and caringly

3. Carefully store and dispose of household cleaners, chemicals, and oil

4. Clean up after your pet

5. Practice good car care

6. Choose earth friendly landscaping

7. Save water

Our Water. Our Future. Ours to Protect.

Find out more at www.semcog.org.

Brought to you by the Southeast Michigan Partners for Clean Water.
Support provided by SEMCOG, the Southeast Michigan Council of Governments (313-961-4266) and the Rouge River National Wet Weather Demonstration Project.

Remember, you're not just washing your car

Our Water. Our Future.

Ours to Protect

Practice good car care

Did you know there are over four million vehicles in Southeast Michigan? **Practicing good car care helps protect our lakes and streams.**

How? Storm drains and roadside ditches lead to our lakes and streams. So, if motor fluids or dirty water from washing our cars are washed or dumped into the storm drain, it pollutes our local waterways.

What can you do? Simple. **Keep your car tuned and fix leaks** promptly, **recycle used motor oil** and other fluids, **take your car to the carwash or wash your car on the grass.**

Find out more at www.semcog.org.

Brought to you by the Southeast Michigan Partners for Clean Water.

Support provided by SEMCOG, the Southeast Michigan Council of Governments (313-961-4266) and the Rouge River National Wet Weather Demonstration Project.

Remember, you're not just fertilizing your lawn

Our Water. Our Future.

Ours to Protect

Fertilize sparingly and caringly

Storm drains found in our streets and yards empty into our lakes and streams. So, **when we fertilize our lawn we could also be fertilizing our lakes and streams**. While fertilizer is good for our lawn, it's bad for our water. Fertilizer in our lakes and streams causes algae to grow. Algae can form large blooms and uses up oxygen that fish need to survive. With 1.5 million homes in Southeast Michigan, all of us need to be aware of the far-reaching effects of our lawn care practices.

What can you do? Simple. Use a **no or low phosphorus fertilizer,** select a **slow release** fertilizer where at least half of the nitrogen is water insoluble (check the ingredients on the label), keep fertilizer away from lakes, streams, and storm drains, and **sweep excess fertilizer** back onto your lawn. Not only will our lakes and streams thank you, but so will your pocketbook!

Find out more at www.semcog.org.

Brought to you by the Southeast Michigan Partners for Clean Water.

Support provided by SEMCOG, the Southeast Michigan Council of Governments (313-961-4266) and the Rouge River National Wet Weather Demonstration Project.

Remember, it's not just toxic to you

Our Water. Our Future.

Ours to Protect

Carefully store and dispose of household cleaners, chemicals, and oil

Did you know that many **household products are dangerous to our pets, kids, and the environment?**
These materials get into our lakes and rivers if washed or dumped into a storm drain or roadside ditch.

What can you do? Simple.

Proper disposal is key. Take household cleaners, pesticides, gasoline, antifreeze, used oil, and other dangerous products to your **community's household hazardous waste collection day.** Contact your community for more information on these events.

Find out more at www.semcog.org.

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Support provided by SEMCOG, the Southeast Michigan Council of Governments (313-961-4266) and the Rouge River National Wet Weather Demonstration Project.

Remember, you're not just getting rid of weeds and pests

Our Water. Our Future.

Ours to Protect

Choose earth-friendly landscaping

Did you know you can **protect your kids, pets, and the environment** from the harmful effects of herbicides & pesticides by choosing earth-friendly landscaping? These chemicals wash off our lawns and gardens into our storm drains, which lead to our lakes and rivers.

What can you do? Simple.
Spot treat for specific pests and weeds or remove by hand. Mulch around plants. **Water your lawn only when it needs it.** Attract butterflies and birds by **adding plants that are native to Southeast Michigan.**

Find out more at www.semcog.org.

Brought to you by the Southeast Michigan Partners for Clean Water.

Support provided by SEMCOG, the Southeast Michigan Council of Governments (313-961-4266) and the Rouge River National Wet Weather Demonstration Project.

Remember, you're not just walking the dog

Our Water. Our Future.

Ours to Protect

Clean up after your pet

Did you know that pet waste has bacteria that makes our lakes and rivers unsafe for swimming and other recreational activities?
That happens when **pet waste left on sidewalks or yards gets washed into storm drains**
or roadside ditches that lead directly to our lakes and rivers.

What can you do? Simple.
No matter where you are **dispose of your pet's waste promptly** in the toilet or trash.

Find out more at www.semcog.org.

Brought to you by the Southeast Michigan Partners for Clean Water.

Support provided by SEMCOG, the Southeast Michigan Council of Governments (313-961-4266) and the Rouge River National Wet Weather Demonstration Project.

Remember, it ALL drains to our lakes and rivers

Keep pollution out of storm drains

Storm drains and roadside ditches lead to our lakes and streams. **So, any oil, pet waste, leaves, or dirty water from washing your car or other outside activities** that enters a storm drain gets into our lakes and streams.

How can you help? Simple. **Use a broom instead of a hose** to clean your driveway. Keep leaves, grass clippings, and trash away from the storm drain, and **never dump motor oil, pet waste, or dirty, soapy water** down the storm drain.
Remember, only rain in the drain!

Find out more at www.semcog.org.

Brought to you by the Southeast Michigan Partners for Clean Water.

Support provided by SEMCOG, the Southeast Michigan Council of Governments (313-961-4266) and the Rouge River National Wet Weather Demonstration Project.

Appendix "D"

Inspection Field Worksheets & Stormwater Sampling
&
Analysis Protocol for School District MS4 Clients (SOP-101)

Created: September 15, 2017
Revision Date: June 27, 2018

Structural BMP Table

Building:			**Client:**		
Inspectors:			**Start Date:**		
			Inspection Type:		

ID #	Type	Inspected	Standing Water	Color	Odor	Structure Staining	Suds	Oil Sheen	Bacterial Sheen	Sewage	Algae	Slimes	Abnormal Vegetation	Flow Observed	Velocity of Flow	Color of Flow	Blockages	Erosion	Needs Cleaning?	Structural Issues	Structural Trend	Stenciled

environmental group

Screening Inspection Log

Building:		Client:	
Inspectors:		Date	
		Inspection Type:	

Structure Information:

ID Number:		Structure Type		Lat:	Long:
Type:		Location:			
Outfall Dimensions					

Observations:

Standing Water Characteristics

Standing Water:	
Color:	
Odor:	
Suds:	
Staining:	
Oil Sheen:	
Sewage:	
Bacterial Sheen:	
Algae:	
Slimes:	
Abnormal Growth:	

Flow Characteristics

Flow Observed:	
Source of Flow:	
Velocity of Flow:	
Color of Flow:	
Flow Odor:	

Maintenance

Cleaning:	
Blockages:	
Structural Issues:	
Structural Trend:	
Stenciling:	

Additional Comments:

Sample ID And Information

Sample Collected?	
Round:	
Last Rain Event:	
Current Weather:	
Screening Location Type:	
Other Screening Activities Conducted:	
Outfall Characterization:	
Sample sent to Lab:	

Field Analysis:	Results:	Units:	Initials:
pH:		pH units	
Temperature:		Celsius	
Surfactants:		mg/L	
Ammonia:		mg/L	
Chlorine:		mg/L	
Turbidity:		NTU	
Conductivity:		uohm/cm	

Equipment Calibration:

Date:	Cal. By:

Photo ID:

Arch Environmental Group
37720 Interchange Drive,
Farmington Hills MI 48370

Phone: (248) 426-0135
Fax: (248) 426-0136
www.archenvgroup.com

Illicit Discharge Investigation Checklist

Buliding _____
Client _____
Date _____

Illicit Connection On Site? _____

Locations Inspected

Boiler Room
- Floor Drains _____
- Sump Pump _____
- Slop Sinks _____
- Toilets _____
- Sinks _____
- Laundry _____
- Pool Discharge _____
- Other Drains _____
- Comments _____

Bathrooms
- Floor Drains _____
- Sump Pump _____
- Slop Sinks _____
- Toilets _____
- Sinks _____
- Laundry _____
- Pool Discharge _____
- Other Drains _____
- Comments _____

Custodial Area
- Floor Drains _____
- Sump Pump _____
- Slop Sinks _____
- Toilets _____
- Sinks _____
- Laundry _____
- Pool Discharge _____
- Other Drains _____
- Comments _____

Pool Room
- Floor Drains _____
- Sump Pump _____
- Slop Sinks _____
- Toilets _____
- Sinks _____
- Laundry _____
- Pool Discharge _____
- Other Drains _____
- Comments _____

Other
- Floor Drains _____
- Sump Pump _____
- Slop Sinks _____
- Toilets _____
- Sinks _____
- Laundry _____
- Pool Discharge _____
- Other Drains _____
- Comments _____

Other
- Floor Drains _____
- Sump Pump _____
- Slop Sinks _____
- Toilets _____
- Sinks _____
- Laundry _____
- Pool Discharge _____
- Other Drains _____
- Comments _____

Storm Sewer Structure Operation Maintenance
Waste Characterization Disposal Record

Building:

Client:

Address:

Inspectors:

Visual Observations

ID #	Type	Date	Conditions?	Industrial area	Outfall flow rate	Sediment / Solids	Odor:	Color:	Turbidity:	Floatables:	Deposits / Stains:	Vegetation:	Damage	Initials

Stream Bank Inspection Table

Client:				**Stream Name:**	
Inspectors:				**Site :**	
				Date:	
Weather in the past 24 hours:				**Current Weather:**	

Field Analysis:

Uptream Turbidity:		NTU		Upstream Temprature:		Upstream pH:	
Downstream Turbidity:		NTU		Downstream Temprature:		Downstream pH:	

Physical Characterization:

In-Stream Characteristics

Pools:	N/A
Runs:	N/A
Riffles:	N/A
Stream Bed Features:	
% of Embedded Bottom:	
Organic Materials:	
Large Wooded Debris	
Water Appearance:	
Water Odor:	

Streambank & Channel Characteristics

Depth of Run:		Stream Erodible Soils:	
Depth of Pool(s):		Bank Modifications:	
Width of Stream:		Condition of Bank:	
Stream Velocity:		Bank Slope:	
Vegitative Cover:			
Shape of Channel:			

Additional Comments:

Watershed / Biological Characteristics:

Wildlife Around Stream:	
Fish In Stream:	
Aquatic Plants in Stream:	
Extent of Alge :	
Potential Stream Impact:	

Stream Photos:

Arch Environmental Group
37720 Interchange Drive,
Farmington Hills MI 48370

Phone: (248) 426-0135
Fax: (248) 426-0136
www.archenvgroup.com

Detention BMP Inspection Checklist*

Project Location:_____

Date/Time: _____

Inspector:_____

Maintenance Item	Satisfactory/ Unsatisfactory	Recommended Inspection Frequency	Comments
Inlet/Outlet Pipes			
Structural integrity of inlet/outlet (Are any inlet pipes broken, crumbling, separated?) List Inlet Pipes Approximate Diameter and Type of Material Inlet Pipe 1 _____ Inlet Pipe 2 _____ Inlet Pipe 3 _____ Outlet Pipe Size/Type _____		A	
Riprap at inlet pipe (Is the riprap still present? Is it visible and not covered with sediment?		A	
Stone around outlet pipe (Is the stone clogged with debris and/or sediment?)		A	
Trash or debris blocking inlet/outlet (Inspect to ensure no major obstructions hindering general functionality)		M	
Inspect/clean catch basin upstream of the BMP if accessible.		A	
Inspect inlets and outlet for erosion (Are there eroded areas around the pipes?)		A	
Inspect overflow spillway for signs of erosion.		A	
Pretreatment (if applicable) (Might include sediment forebay, upstream catch basin, bioswale, rain garden, swirl concentrator)			
Device functioning to trap/collect sediment		A	
Remove accumulated sediment as appropriate for the pretreatment device. forebay		A	
Detention Pond		A	

Inspection frequency key — A = Annual, M = Monthly, S = After major storm
*It is recommended to review and inspect the basin with the engineering as-built plans.

Maintenance Item	Satisfactory/ Unsatisfactory	Recommended Inspection Frequency	Comments
Inspect side slopes, berms and emergency overflow for erosion		A	
Reestablish permanent native vegetation on eroded slopes		As needed	
Inspect for excess sediment accumulation in pond if not pretreatment device is present		A	
Overall functionality			
Ensure pond is functioning properly (Professional Civil Engineer is recommended)		A	
Ensure the outlet is functioning properly (Professional Civil Engineer is recommended)		A	
Optional/Enhancements			
Maintain 15-20 feet “no mow and chemical free” zone		A	
Mow (or burn) the “no mow” zone		A	
Inspect basin and “no mow” zone for invasive species.		A	
Qualified professional applicator selectively herbicide invasive species		A	
Increase plant diversity by planting additional vegetation in and around pond.		A	
Complaints from residents (note on back)		S	
Encroachment on pond/no- mow zone.		A	
Unauthorized plantings		A	
Aesthetics (e.g., graffiti, unkept maintenance)		A	

Inspection frequency key — A = Annual, M = Monthly, S = After major storm
*It is recommended to review and inspect the basin with the engineering as-built plans.

Summary

Inspector’s remarks: _____

_____

Overall condition of facility (acceptable or unacceptable): Acceptable

Dates any maintenance must be completed by: _____

Inspection frequency key — A = Annual, M = Monthly, S = After major storm
*It is recommended to review and inspect the basin with the engineering as-built plans.

ARCH ENVIRONMENTAL GROUP, INC.

STORMWATER SAMPLING AND ANALYSIS PROTOCOL FOR SCHOOL DISTRICT MS4 CLIENTS (SOP-101)

Updated By:

Ms. Christine Caddick,
cleanWATER Division
Certified Industrial Site Stormwater Operator No. I-11934
Arch Environmental Group, Inc.
37720 Interchange Drive
Farmington Hills, Michigan 48335

Table of Contents

1.0 Summary Statement

Arch Environmental Group, Inc. (AEG) has developed and implemented this protocol (i.e., Standard Operating Procedure – "SOP-101") which includes quality provisions for completing stormwater sampling for School District Municipal Separate Storm Sewer System (MS4) clients in Michigan.

2.0 Background

Public school districts in urbanized areas are required under the federal National Pollution Discharge Elimination System (NPDES) "Phase II" regulations, implemented in Michigan by the Michigan Department of Environmental Quality (MDEQ), to obtain permit coverage for storm water discharges. The permit coverage is based on the individual district client circumstances. In some cases, permit coverage for a school district may be authorized or "nested" under a local government (city, village, township or county) MS4. In either case, specific requirements must be followed. The requirements are based on the specific NPDES MS4 permits and the associated Certificate of Coverage (COC) issued to the school district by the MDEQ. The school district may be covered under a NPDES permit which includes a Stormwater Management Program plan (SWMP) or a Stormwater Pollution Prevention Initiative plan (SWPPI). The plan defines the method and programs the permitee shall follow to ensure permit compliance, including storm water sampling requirements. The specific COC may also define additional requirements (i.e., Total Maximum Daily Loads – "TMDL's") for the school district based on the geographic location of the school district's facilities and the receiving surface waters of the State.

The NPDES MS4 permit and COC conditions covered in the SWMP or the SWPPI plans may require sampling during dry weather screening (DWS) and wet weather monitoring (WWM) activities at applicable discharge points/outfalls at individual school district properties. Dry weather sampling as defined by the MDEQ is sampling at least 48 hours after a precipitation event, including snow melt. Typically, no water flow would be present at a discharge point/outfall after this period of time following a precipitation event. Water flow in dry weather may indicate that a substance other than stormwater is present in the stormwater system. DWS activities include sampling of any observed dry weather flows at every discharge point/outfall throughout the school district, primarily in effort to identify potential illicit discharges. Depending on the results of the DWS sampling, AEG and the school district may be required to perform additional and follow up illicit discharge investigations. Wet weather monitoring (WWM) sampling is required to demonstrate compliance with district assigned TMDL's and post-construction run-off requirements for total suspended solids (TSS). The specific sampling and analytical test methods utilized for DWS and WWM are described in Sections 5.0 and 6.0 respectively.

3.0 Objectives and Needs

AEG developed and implemented the standardized protocol (SOP-101) for completing the required DWS and WWM stormwater sampling for school district MS4 clients in Michigan. AEG utilizes similar

protocols for other stormwater clients, with minor modifications based on applicable permit requirements, TMDL's and sampling parameters. The principal objective of this protocol is to provide quality data to demonstrate stormwater permit compliance as outlined in the SWMP or SWPPI for the school district MS4 clients in a timely and cost-effective manner. Sampling methods and target indicator parameters for this protocol have been optimized for school district clients. The results of the sampling are used by the client for: 1) identifying and remediating illicit discharges and connections (part of the permit's Illicit Discharge Elimination Program – "IDEP"); 2) demonstrating compliance with TMDL's, post-construction TSS limit, and other surface water quality standards; and 3) for developing improvements in facility operations and stormwater structural controls (BMP's).

This AEG protocol is based on the specific NPDES MS4 permit requirements, MDEQ recommendations, and industry-accepted stormwater sampling and analytical procedures. This protocol also incorporates key elements of quality systems for environmental monitoring projects utilized by the United States Environmental Protection Agency (EPA), MDEQ, and other governmental and non-governmental organizations. This protocol was developed to ensure that the sample collected and analyzed, the management of the data, and the report provided to the clients, are of sufficient quality to meet the identified current project objective and needs.

4.0 Quality Considerations

In order to ensure the data is of sufficient quality for the project objective and needs, AEG first investigated the requirements for the National Pollutant Discharge Elimination System Permit. The following requirements were identified:

1) Samples and measurements shall be representative of the volume and nature of the monitored discharge or water body.
2) Analytical procedures shall conform to 40 CFR 136, unless otherwise specified in the permit, or an alternate test procedure (ATP) is approved by the MDEQ.
3) The laboratory analyzing the samples shall periodically calibrate and perform maintenance on instrumentation at regular intervals to ensure accuracy of measurements. The calibration and maintenance shall be performed as part of the laboratory's quality assurance (QA) / quality control (QC) program.
4) Use of commercially available field test kits and similar equipment (portable electronic sensors) is allowed for screening and analysis of dry-weather flow, provided the calibration and maintenance provisions in 3) are followed.

The MDEQ has provided limited recommendations regarding qualitative considerations when performing MS4 stormwater sampling and analysis. Refer to the DWS and WWM sampling and analysis sections for further discussion of MDEQ recommendations.

Next, AEG investigated the quality systems required for environmental monitoring projects performed for and funded by the EPA and the MDEQ. The EPA requires that recipients of EPA funding for work involving environmental data shall comply with American National Standards Institute (ANSI) ASQC E4-1994 "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs".[1] To demonstrate conformance to the standard, the EPA requires two forms of documentation:

1) Documentation of the organization's quality system (referred to as a Quality Management Plan "QMP"), and
2) Documentation of the application of QA/QC activities to a project-specific effort (referred to as a Quality Assurance Project Plan "QAPP").[2]

For small grants and contracts, the EPA may allow the QMP & QAPP to be combined into a single document. Further, the EPA allows a "graded approach", which means the level of effort and detail expended to develop and document quality measures shall be based on the nature of the work being performed and the intended use of the data.

In recognizing the value that volunteer organizations can offer in collecting environmental data, as well as potential problems involving data credibility from these organizations, the EPA published "The Volunteer Monitor's Guide to Quality Assurance Project Plans", EPA 841-B-96-003, September 1996.[3] This document recommends that volunteer organizations performing environmental monitoring develop a QAPP, especially if the data might be used by state, federal, or local resource managers.

Similar to the EPA program, the MDEQ requires that MDEQ staff and recipients of MDEQ funding for work involving environmental data shall comply with Water Bureau Policy and Procedures # WB-008, "Quality Assurance Planning for Environmental Data Collection", May 2007. This policy, which essentially duplicates the EPA quality requirements identified above, requires the formation and approval of a QAPP prior to the start of environmental data collection for MDEQ funded projects.

In June, 2010, the MDEQ published "Wet Weather Pollution in Michigan", Report No. MI/DNRE/WB-10/020, that includes in *Appendix A*, TMDL sampling guidance for MS4's and which states that, although not required, preparation of a QAPP "…is always a good idea prior to sample collection…"[4] However, the MDEQ also states that "this guidance may present logistic and budgetary challenges if fully implemented", and "it is recognized that a final monitoring program will have to balance the need for accurate and representative data with available resources, and that reduced efforts may be necessary."

[1] http://www.epa.gov/QUALITY/faq9.html
[2] http:/www.epa.gov/QUALITY/faq6.html
[3] http://water.epa.gov/type/rsl/monitoring/qappcovr.cfm
[4] http://michigan.gov/documents/deq/wb-spotlight-wetweather_323733_7.pdf

At a minimum, this MDEQ guidance recommends that MS4's develop and follow QA/QC procedures to ensure stormwater samples are collected, preserved, and analyzed properly.
AEG believes that this protocol (SOP-100) developed for stormwater sampling and analysis for school district MS4 clients, while not required to comply with the EPA and MDEQ quality provisions identified above, is consistent with the EPA and MDEQ approach. This protocol incorporates key elements and recommendations of the EPA and MDEQ programs to ensure that the storm water monitoring data is representative of the discharges and of sufficient quality to meet the identified current project objective and needs. Additional QA/QC steps included in this protocol are listed in a later section.

5.0 Dry Weather Screening (DWS) Sampling and Analytical Methods

In accordance with the IDEP requirements of the NPDES MS4 permits, MS4's shall conduct DWS at a minimum of once every five years activities at each discharge point/outfall. Additional sampling may be necessary to investigate potential illicit discharges up to and including upstream of the discharge point/outfall, and confirming or investigating suspect results. AEG collects and maintains records and sample data of all discharge points/outfalls for each school district MS4 client for individual school buildings located on a common district property. Each discharge point and outfall is assigned a unique identifying description (ex: MES-02.OP.OF) based on the site map of the stormwater drainage system completed for each specific school district facility. DWS screening and sampling will only be conducted at upstream locations if dry weather flow is identified at the district property discharge point/outfall. Use of tracer dyes and other aspects of the IDEP investigations are not addressed in this sampling and analysis protocol.

The methods developed to conduct the DWS sampling and analysis of observed flows are based on the NPDES MS4 general permit requirements, and incorporate industry-accepted procedures from the following external reference sources. Field staff shall refer to these cited reference documents for questions related to: where samples should be collected; how to collect representative samples; avoiding stagnant water and touching the sides/bottom of structures, and unique methods such as constructing temporary weirs for sampling shallow flows.

1) "Michigan Municipal Separate Storm Sewer System (MS4) Permit – Illicit Discharge Elimination Plan/Program", Water Bureau Compliance Assistance document, MDNRE, rev. August 2010.
2) Brown, E., Caraco, D., and Pitt, R. 2004. *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessment*, Center for Watershed Protection and University of Alabama. EPA X-82907801-0. EPA Office of Wastewater Management, Washington, D.C.
3) "NPDES Stormwater Sampling Guidance Document", EPA 833-B-92-001, July 1992;
4) "Industrial Stormwater Monitoring and Sampling Guide – Final Draft", EPA 832-B-09-003, March 2009;

5) "How to do Stormwater Sampling – A guide for industrial facilities", Washington State Department of Ecology, Publication #02-10-071, rev. March 2010;
6) "Guidance Manual: Stormwater Quality Monitoring Protocols", CTSW-RT-03-109.51.42, California Department of Transportation, July 2000;
7) "Illicit Discharge Elimination Program (IDEP) Compliance Assistance Document", Michigan Department of Environmental Quality, Water Resources Division, September 2014.

AEG field staff use local weather reports or data from internet weather websites (i.e., NOAA, etc.) to confirm that no precipitation event (including snow melt and other similar factors) has occurred within a minimum of 48 hours prior to starting any DWS investigations or collecting any DWS samples. Weather data is recorded on the standardized field inspection forms. Unless otherwise approved by management, DWS and sampling is conducted with two field personnel for safety, logistical, and quality reasons. Field staff shall follow the company Health and Safety Plan (HASP) for all activities. For sampling, staff is required to use standard Level D protective wear, powder-free nitrile gloves, and safety glasses.

All sampling equipment is prepared and/or assembled in the shop. Portable electronic sensors (probes for field screening analyses) are calibrated according to internal QA/QC procedures. In accordance with published guidelines and manufactures recommendation, at a minimum, pH, turbidity, and conductivity probes are calibrated monthly during periods of use to ensure accurate and consistent results.[5] For special investigations requiring additionally documentation of meter accuracy, AEG may confirm calibration of the pH probes in the shop twice each sampling day (once in the morning prior to use and once in the evening at the end of sampling). Refer to section 7.0 Additional QA/QC Methods for additional information. A checklist is utilized to make sure all necessary items are ready for each sampling event, including sampling equipment, sample bottles, safety equipment, and test kit components. The use of a checklist minimizes unproductive return trips to the shop.

Based on the test procedures selected, AEG receives pre-assembled kits in plastic zip-lock bags of the required sample bottles, complete with preservatives, from an external third party laboratory. For quality purposes, pre-assembled kits are ordered on a just-in-time basis. In no case are sample bottles with preservatives stored for greater than six (6) months. All sample bottles are new and clean for each event. Sample bottles for bacteria (total coliform and E. coli) analyses are provided by the laboratory in a sterilized and sealed condition. A cooler with ice and thermometer ensures that samples are preserved in the prescribed manner for delivery to the external laboratory.

Appendix A contains a table which identifies the test method, container, preservative, hold time, and minimum reporting limits for each test procedure utilized. Sample information and requested analytical tests are recorded on a standardized chain of custody form, which ensures samples are delivered to and

[5] http://stormwaterbook.safl.umn.edu/content/situ-site-and-grab-and-automatic-sampling

received by the laboratory within required specifications. Where required and/or safe to do so, sample bottles are completely filled (i.e., convex meniscus) leaving no head space to minimize potential degradation of the sample prior to testing. Where required, and as a general rule, sample containers are kept on ice in the cooler at ~4^{o}C for delivery to the laboratory. Appendix B contains instructions for field staff in filling the sample bottles and completing the Chain of Custody form. Appendix C contains the laboratory acceptance criteria to ensure that the stormwater samples are received in a manner consistent with the specified test methods and as part of the laboratory's internal QA/QC program. Samples are either qualified or rejected by the laboratory if they do not meet the identified acceptance criteria.

For observed dry weather flows at stormwater outfalls or discharge points, Protocol SOP-101 includes field screening in addition to visual inspection. Refer to Figure 1 for the DWS decision-making flowchart.

In accordance with the NPDES MS4 permit conditions, discharge points/outfalls are visually inspected for: presence or absence of water flow, unusual vegetative growth, staining, undocumented connections, and structural integrity. If standing or flowing water is present, the flow is inspected for: water clarity, color, and odor; the presence of suds, oil sheens, sewage, floatable materials, bacterial sheens, algae, and slimes; staining and unusual vegetative growth. All field observations are recorded on a standardized inspection form, and a photograph is taken of the outfall/discharge point as well as the observed flow (if present).

If water flow is observed, an onsite source investigation shall be conducted to determine the origin of the flow. The initial source investigation includes visual and olfactory observations upstream from the outfall/discharge point. If necessary, relevant indicator field screening, video camera inspection and/or dye tracing will be conducted.

If dry weather flow is observed and the source is not identified during the source investigation; a grab sample is collected for indicator field screening analysis. The grab sample is collected for analysis in accordance with permit requirements. All grab samples are collected using industry-standard equipment and using the methods and techniques described in the cited reference documents (see pages 4-5). Samples are collected only from the center of flow discharges and not from stagnant water. Careful attention is placed on not contacting or disturbing the sides and/or bottoms of structures while collecting the sample. The field staff uses a clean-hands/dirty-hands approach, such as the person handling the sample containers maintains clean hands, while the other team member performs operations such as opening manhole lids.

Next a field screening process is performed to assess the dry weather flow. The field screening includes seven (7) indicator parameters. The selected indicator parameters are:

1) temperature;

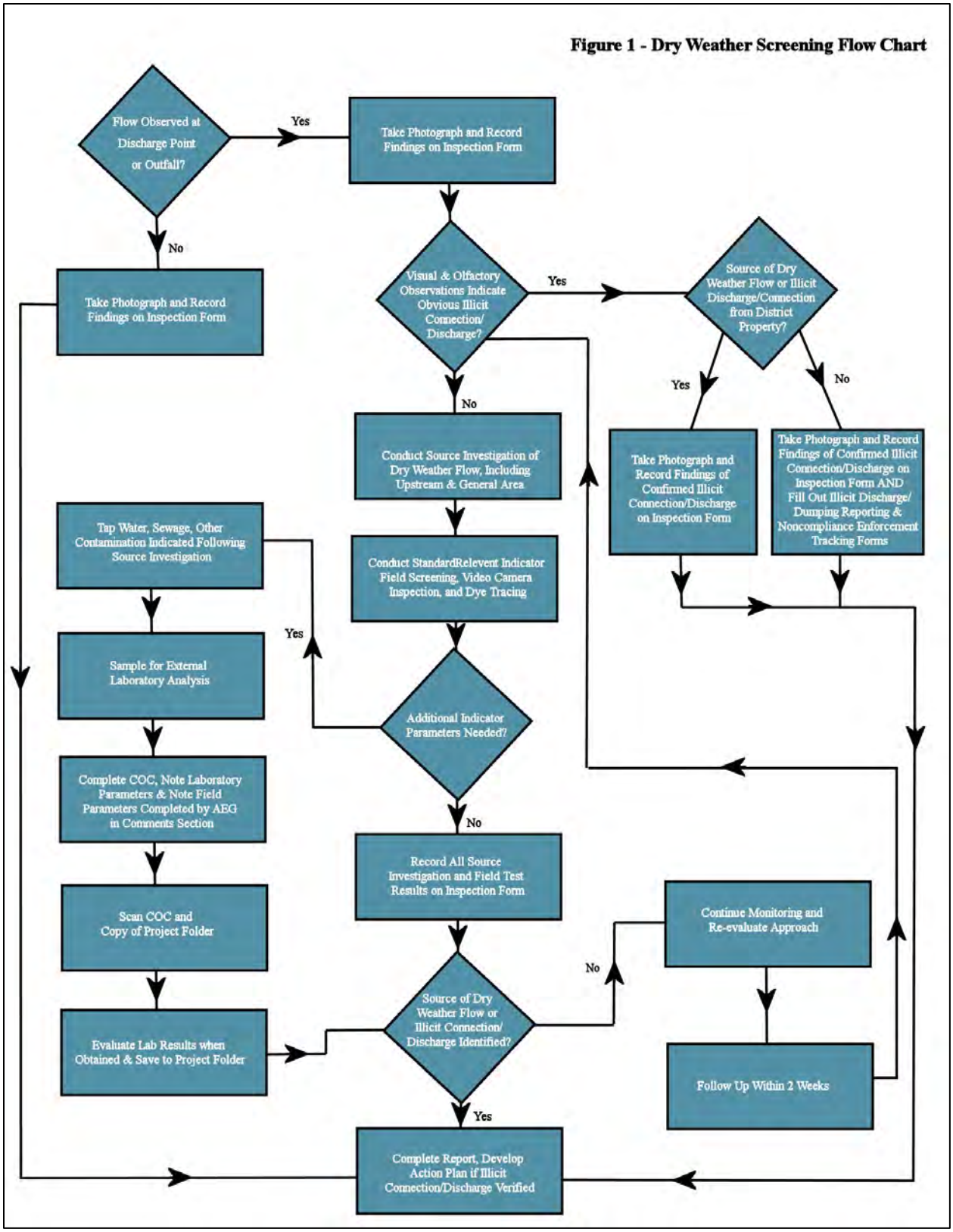
2) pH;
3) detergents (i.e., surfactants);
4) chlorine;
5) ammonia (NH_3-N);
6) turbidity; or
7) conductivity.

Indicator parameters used to assess the dry weather flow shall be determined by the visual and olfactory observations and source investigation. The pH and temperature measurements are made in-situ or as soon as possible after collecting the grab sample. If the pH and temperature measurements cannot be made within 15 minutes, another grab samples shall be collected. Sample collection instruments and test probes are rinsed with distilled water and triple rinsed with the water flow to be sampled prior to collection at each location. In accordance with published guidelines and manufactures recommendation, at a minimum, pH probes are calibrated monthly during periods of use to ensure accurate and consistent results.[6] For special investigations requiring additional documentation of meter accuracy, AEG may confirm calibration of the pH probes in the shop twice each sampling day (once in the morning prior to use and once in the evening at the end of sampling). The latest meter calibration date is documented on the field inspection forms, along with the results obtained for the seven (7) indicator parameters. Grab samples collected for analysis by field test kits are also noted on the Chain of Custody form without requesting external laboratory analysis. Refer to Appendix B. After use, the field test kits and portable meters are stored in accordance with the manufacturer's instructions.

Additional grab samples will be collected and delivered for external laboratory analysis only if additional test parameters are required for the source investigation. The laboratory analysis parameters for grab samples are determined by the type of contamination suspected at the time of the source investigation. Refer to Figure 1 for a DWS decision-making flowchart.

[6] http://stormwaterbook.safl.umn.edu/content/situ-site-and-grab-and-automatic-sampling

Figure 1 - Dry Weather Screening Flow Chart



Laboratory indicator parameters are based on MDEQ guidance and as specified in the reference sources identified above. The selected laboratory parameters are:

1) Fluoride;
2) Coliform;
3) E-coli;
4) Potassium;
5) Color; and
6) Ammonia.

The grab samples are transferred from the sampling device into the pre-prepared sample bottles in conformance with the cited reference sources and instructions in Appendices A-C for delivery to the external laboratory within allotted hold times and conditions. The laboratory records the temperature of the samples on the chain of custody form upon receipt. As noted above, the table in Appendix A lists sample containers, preservatives, hold times, test methods, and minimum reporting limits utilized as part of this protocol.

Once the laboratory analysis results are received, the results are interpreted using the Flow Chart Method described in reference source # 2 listed on Page 4. The Flow Chart Method is based on evaluating different indicator parameters in an effort to identify the potential source(s) of flow in dry weather.

The results from the DWS field tests and external laboratory analyses are recorded in a table "SW Outfall Sampling Log" maintained on behalf of the client by AEG. The table identifies the school district MS4, building, and unique outfall identifier descriptions. If any of the indicator parameters are outside of permit levels or published benchmark standards for stormwater, then AEG initiates further source investigation. The investigations typically involve additional DWS sampling at stormwater structures and/or outfalls upstream of the original discharge point/outfall.

If an illicit connection or discharge is identified during the source investigation, originating from non-district personnel or property, AEG will notify the appropriate district staff and note source information on the "SW Outfall Sampling Log". Additionally, AEG shall complete the following documentation:

- District Illicit Discharge Dumping and Reporting Form (if available)
- District Noncompliance Enforcement Tracking Form (if available)

If the illicit connection/discharge is identified to be originating from district personnel or property, AEG will notify the appropriate district staff and note source information on the "SW Outfall Sampling Log".

6.0 Wet Weather Monitoring (WWM) Sampling and Analytical Methods

The methods utilized for WWM sampling and analyses are similar to those described above for DWS investigations. The primary difference is that the activity is done during wet weather events to collect grab samples of "representative" flows. The primary purpose of WWM is to demonstrate compliance with applicable TMDL's or post-construction run-off requirements for TSS. For WWM, field screening tests are performed only for temperature and pH. Additional grab samples are collected by AEG field staff, at the same time as the field screening grab samples, for field analysis and by the external laboratory. The grab sample is analyzed using a field test kit and portable electronic probes for seven (7) indicator parameters: temperature, pH, detergents (i.e., surfactants), chlorine, ammonia (NH_3-N), turbidity and conductivity. Additional indicator parameters are analyzed for fluoride, coliform, E-coli, potassium, color and ammonia by the external laboratory, along with the regulated TMDL parameter(s) and/or TSS, as applicable. The applicable TMDL parameters are identified in the COC and are based on the MS4 receiving surface waters. TMDL's for the MS4 as currently identified are as follows: Dissolved Oxygen, E. coli, Phosphorus, and Sedimentation/Biota.

TMDL Sampling

For TMDL compliance, at least one "representative" sample of a stormwater discharge is required from at least 50% of the discharge points. Sampling at other outfalls/discharge points may also be performed as defined in the SWMP or SWPPI plans. The purpose of the sampling is to demonstrate the effectiveness of structural and non-structural controls (i.e., Best Management Practices – "BMP's") and for compliance with applicable permit limits (i.e., TMDL's).

Sampling at discharge points:

1) The sample will be from the stormwater, at or before the discharge point, not ambient waters after the discharge mixes with the water body.
2) The focus area is within, or contributing to, the listed TMDL reach. The municipality's jurisdiction may include land and discharge points upstream of this area. In this case, sampling of discharge points upstream of the TMDL reach should be included.

What constitutes a "representative" WWM sample is not defined in the permits. However, MDEQ and other guidance documents recommend that:

1) There be between 0.25" – 1.5"of rain within a twenty-four (24) hour period;
2) Sampling be conducted as soon as possible following the start of discharge to capture a sample of the "first flush";
3) Sampling be completed within the first 12 hours of the stormwater discharge event; and
4) WWM sampling should only occur following a dry period of 72 hours or more.[7] [8]

[7] http://michigan.gov/documents/deq/wb-sw-ms4-TMDL_sampling_305960_7.pdf

For TMDL compliance, sample of a stormwater discharge should be conducted:

1) Between May 1 and October 31 due to the difficulties with cold-weather sampling.
2) Sampling wet weather should occur only after it has been dry for at least 72 hours.
3) Very small storm events may not generate significant runoff. Therefore, sampling should not occur until there has been at least ¼ inch of rain within a 24 hour period. There will be times when a suitable event has been forecast, causing monitoring efforts to begin, only to have to cancel due to insufficient precipitation.
4) Sampling should be conducted as soon as possible following the start of discharge from targeted discharge points to capture a sample of the 'first flush'. First flush is defined as the runoff discharge at the beginning of a storm event and is assumed to consist of a significant amount of pollutants.
5) Synchronized sampling should be done as often as possible. Synchronized sampling is when several discharge points are sampled at or near the same time. If enough trained staff are available, all sites should be sampled during the same time period.

The results from the WWM field tests and external laboratory analyses are entered into the Excel spreadsheet for the MS4 in the same manner as done for DWS results. Further sampling is performed only if initial results are elevated or otherwise suspect.

In addition to the general quality provisions identified in the above sections, this protocol (SOP-101) for stormwater sampling and analysis includes the following QA/QC steps to ensure that the stormwater monitoring data is representative of the discharges and of sufficient quality to meet the identified current project objective and needs:

[8] http://www.ecy.wa.gov/pubs/0210071.pdf

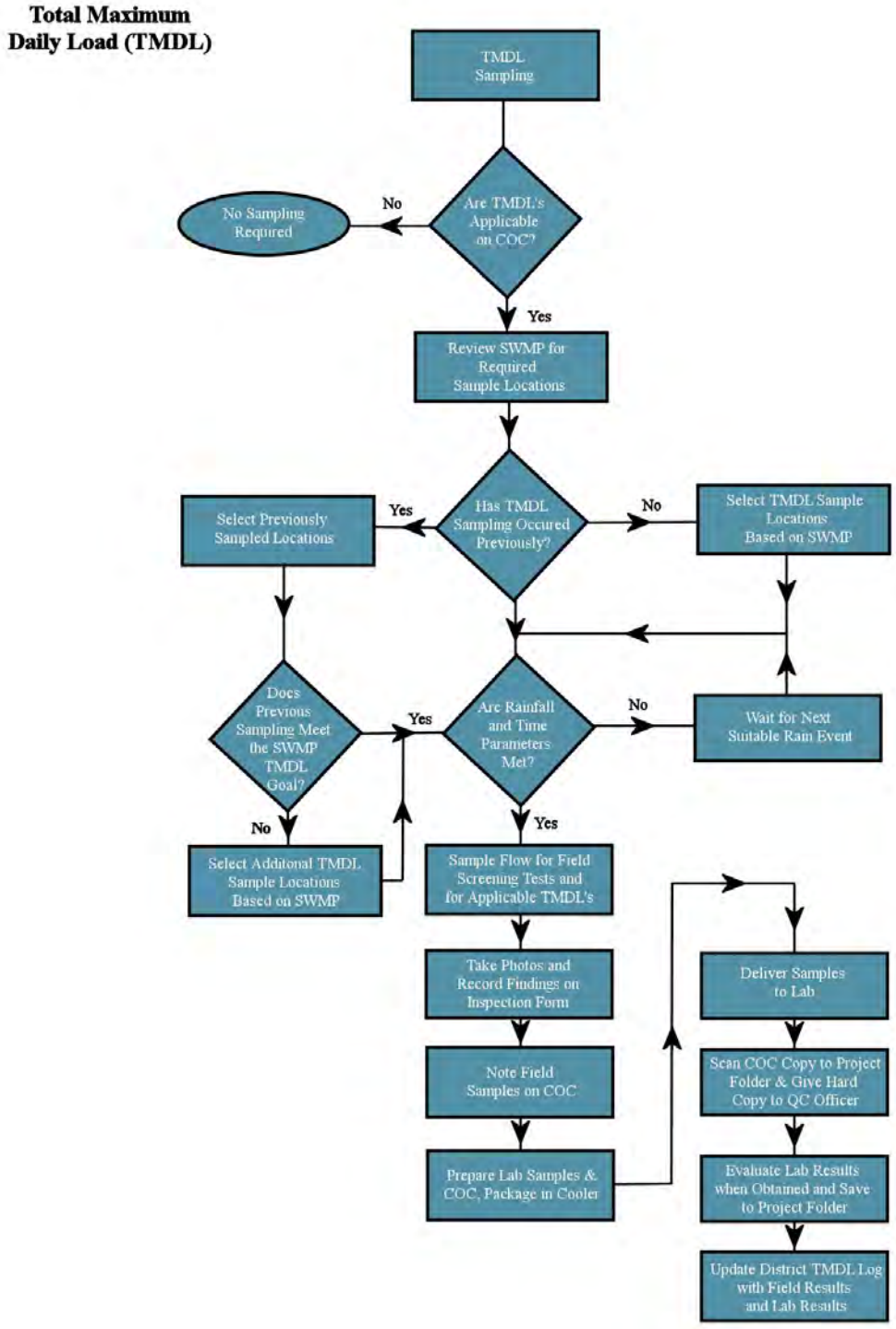


Figure 2 - Wet Weather Monitoring Flowchart

Construction & Post Construction Sampling

As noted above, sampling during wet weather may also be required to demonstrate compliance with the post-construction stormwater runoff requirements for total suspended solids (TSS). Post-construction sampling is only required for new and redeveloped projects that disturb one (1) acre or more (ex: a new parking lot).

WWM Construction & Post Construction sampling for total suspended solids shall be conducted for the following:

1) A rain event results in a sediment discharge from a construction site that meets the following:
    a. Greater than 1 acre in size;
    b. Within five hundred (500) feet of an EPA/MDEQ identified waterbody or wetland, and/or;
2) A construction site that is required by the permitting agency to monitor and regulate stormwater discharges.

In addition to the sampling, a Soil Erosion and Sediment Control inspection shall be conducted by a state certified SESC inspector. The inspection shall include corrections and recommendations as required by the SESC regulations.

Total Suspended Solid (TSS)

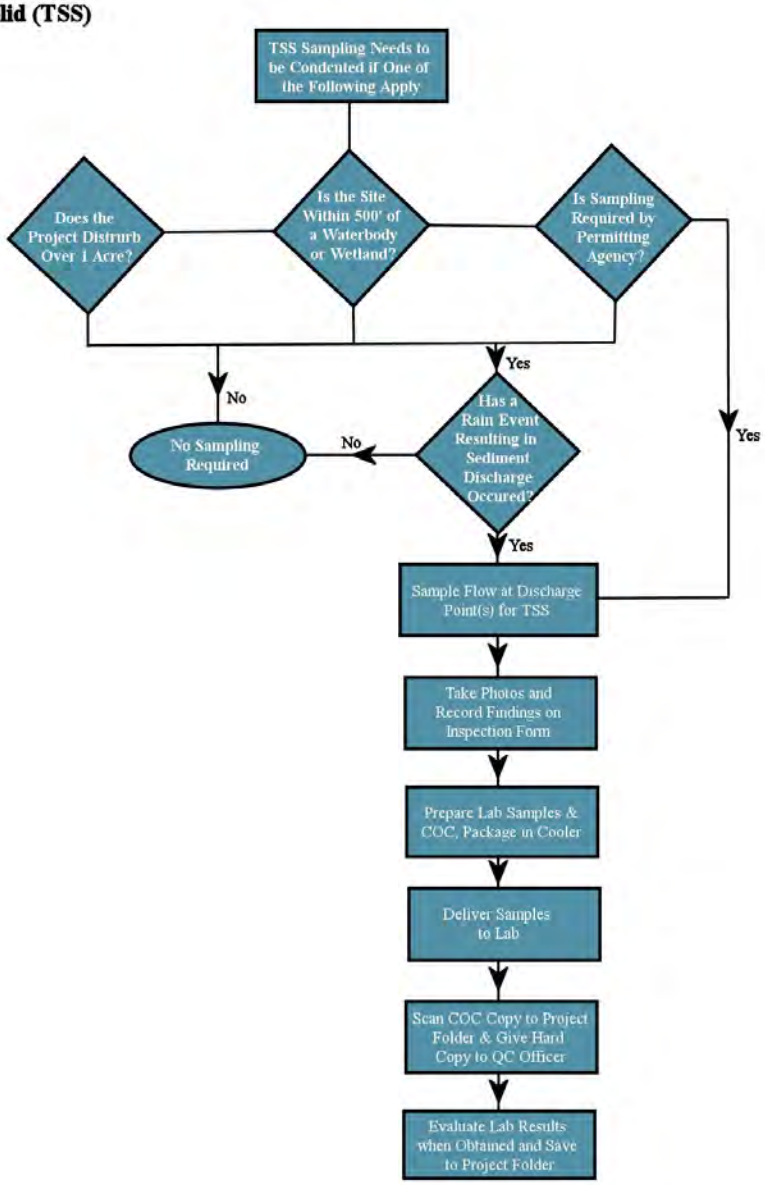


Figure 3 - Construction & Post Construction Sampling

7.0 Additional QA/QC Methods:

In addition to the general quality provisions identified in the above sections, this protocol (SOP-101) for stormwater sampling and analysis includes the following QA/QC steps to ensure that the stormwater monitoring data is representative of the discharges and of sufficient quality to meet the identified current project objective and needs:

Quality Assurance:

- Training
    - Field staff shall be stormwater operators certified by the MDEQ.
    - Field staff shall receive annual refresher training on this protocol, including:
        - proper stormwater sampling techniques and sample handling;
        - proper equipment operation, calibration, maintenance, cleaning & storage;
        - proper handling & storage of test kit reagents, DI water, & calibration fluids; and
        - identified quality assurance and quality control procedures.
    - Field staff shall receive annual HAZWOPER refresher training to ensure that all activities are performed in a safe manner (refer to HASP), including:
        - working in teams of two, unless authorized by management;
        - wearing proper personal protective equipment (PPE);
        - NOT entering confined spaces;
        - ensuring that all waste materials are properly managed, and
        - knowing what to do in case of an accident or emergency situation.
            - Management shall maintain staff training records, and make available upon request by clients and/or applicable government agencies (i.e., MDEQ).
- Equipment management, calibration, frequency, and documentation
    - Field staff shall inspect, maintain, and clean sample equipment and store items in a manner to prevent damage and contamination in accordance with the manufacturer's instructions and EPA guidance.[9][10]
    - Field staff shall calibrate pH meters (and other electronic probes, as applicable), monthly during periods of use, and report any problems to the QC Officer.[11] Staff shall follow written calibration procedures. Calibration dates and staff initials shall be recorded in a log maintained with the instrument or in a designated file cabinet.
    - Prior to sampling, field staff shall verify that the pH meter has been calibrated within the prior month and then enter the latest calibration date on the field inspection forms.

[9] http://www.epa.gov/epawaste/hazard/testmethods/faq/faqs_sampl.htm
[10] http://www.epa.gov/region4/sesd/fbqstp/Field-Equipment-Cleaning-and-Decontamination.pdf
[11] http://stormwaterbook.safl.umn.edu/content/situ-site-and-grab-and-automatic-sampling

  - Sample bottles shall be new and provided by the contracted laboratory in kits (sealed in zip-lock plastic bags) based on the tests to be performed, including any required preservatives. The date of receipt shall be noted on the plastic bag. Sample kits with bottles containing preservatives shall not be used if over six (6) months old.
  - Sample kits with bottles containing preservatives, DI water, calibration solutions, and field test kit reagents shall be dates and stored in a manner to prevent deterioration (i.e., lids securely closed, dry location, and room temperature).
  - DI water shall be replenished as needed, but in no case shall be used after being opened and stored for over six (6) months.
  - Chemical solutions and chemical reagents for field test kits shall be replaced on an as needed basis, and replaced at least annually once containers have been opened and used.
- Sample collection and analysis
  - All stormwater sampling shall be done in teams of two for safety reasons and to cross-check work, unless an exception is authorized by management. A clean-hands/dirty-hands technique shall be used by the field team to prevent contamination of samples.
  - Field staff shall properly complete the Chain of Custody form, in accordance with the procedures in Appendix B, for all collected samples (both analyzed by field test kits and delivered to the external laboratory).
  - Field staff shall identify on the Chain of Custody form any issues or exceptions that occurred when collecting samples.

<u>Quality Control:</u>

- Internal Quality Control
  - Equipment Quality Control
    - Field staff shall inspect equipment prior to use in order to ensure it is clean, in working order, and not damaged.
    - Field staff shall clean and inspect all equipment after use.
    - Field staff shall check the dates on all sample bottle kits, field test kit reagents, calibration fluids, and DI water containers prior to use to verify they are within the acceptable time limits as noted above.
  - Field Procedures Quality Control
    - Field staff shall check all Chain of Custody forms for proper completion before submitting with samples to the external laboratory
  - Data Analysis Quality Control
    - Staff shall check all manual calculations twice.
    - For automatic calculations (ex: iPad tables, Excel files, etc.), staff shall confirm all program formulas are correct prior to use.
    - For field data entry and management using electronic devices (ex: iPad), approximately 10% of entered data shall be double-checked by the field team partner for accuracy.

        - Prior to finalization, staff shall inspect all documents containing data for errors by comparing to original field notes, laboratory reports, etc.
        - The QC Officer or designee shall review all internal QC sample results on a quarterly basis, and provide management with a summary of findings.
        - All reports containing monitoring data and/or recommendations to be sent to the client or outside organizations shall first receive a quality review by the QC Office or Project Manager.
- External Quality Control
    - Laboratory Sample Quality Control
    - The contracted laboratory shall comply with the identified requirements of the NPDES MS4 general permits. Refer to Section 4.0 on Page 2, and Appendix A.
    - Follow an internal QA/QC program
        - Maintain and calibrate equipment to ensure accuracy
        - Use the EPA test procedures in 40 CFR 136 or approved alternate procedure.
        - The laboratory shall notify the client in writing of any test results which do not conform by the QC Officer.
    - Staff shall examine the completed Chain of Custody form returned from the laboratory with each sample result to check for any noted discrepancies. Discrepancies shall be reviewed with management prior to utilizing or reporting the analytical data.
    - QC Officer or designee shall review the external laboratory's QA/QC program every three years for conformance with internal procedures and test method specifications, and provided management with a summary of findings.

APPENDIX A

APPENDIX A

STORMWATER TEST METHOD SPECIFICATIONS

Field Screening Tests DWS/IDEP (Grab Sample)											
Parameter	Methodology	EPA 40 CFR 136 Approved Method [a]	Current or Alternate Procedure [b]	Container Type & Size [c]	Chemical Preservative	Holding Temperature °C	Holding Time [d]	Approx. Reporting Range [e]	Approx. Resolution or LRL	Units	Approx. Accuracy
pH	electrometric; ion-selective electrode	SM 4500-H+B	EPA 150.1; [f]	P, FP, G; 50 mL	none; no headspace	4°C if transported; test is time / temperature sensitive	ASAP; <15 min	0-14	1	pH	+/- 0.1
Temperature	thermometric	SM 2550 B	[f]	P, FP, G; 50 mL	none	at test temperature	ASAP	0-40 °C	0.1	°C	+/- 0.2
Surfactants (aka Detergents)	colorimetric; Hach Test Kit (Toluidine Blue-O)	SM 5540 C	EPA 425.1; [f]	P, FP, G; 100 mL	none; no headspace	4°C if transported	ASAP; <48 hrs	0-1.3 mg/L	0.05	mg/L	+/- 0.1
Ammonia (NH_3-N)	colorimetric; Hach Test Kit (Salicylate)	SM 4500-NH3 C	EPA 350.3; [f]	P, FP, G; 500 mL	no headspace, H2SO4 pH<2 [g]	4°C	ASAP; < 28 days [g]	0-5 mg/L	0.1	mg/L	+/- 0.1
Chlorine	Hach Test Kit	SM 4500 Cl F	EPA 330.1; [f]	P,G; 200 mL	none; no headspace	4°C	ASAP; <15 min	0-3.5 mg/L	0.1	mg/L	+/- 0.1
Conductivity	specific conductance by conductivity meter	EPA 120.1	EPA 120.1; [f]	P, FP, G; 50 mL	none; no headspace	4°C	ASAP; <24 hrs	0-2500 est.	1	uohm/cm	+/- 1
Turbidity	nephelometric	EPA180.1	EPA 180.1; [f]	A/P; 100 mL (amber bottle)	none; no headspace; store in dark	4°C	ASAP; <48 hrs	0-40	0.05	NTU	+/- 0.1

APPENDIX A

STORMWATER TEST METHOD SPECIFICATIONS

Laboratory Analytical Tests - Standard Indicator Parameters DWS/IDEP/WWM (Grab Sample)											
Parameter	Methodology	EPA 40 CFR 136 Approved Method [a]	Current or Alternate Procedure [b]	Container Type & Size [c]	Chemical Preservative	Holding Temperature °C	Holding Time [d]	Approx. Reporting Range [e]	Approx. Resolution or LRL	Units	Approx. Accuracy
Surfactants	colorimetric (MBAS)	SM 5540 C	EPA 425.1	P, FP, G; 100 mL	none; no headspace	4°C	</= 48 hrs	0.1-100	0.1	mg/L	+/- 0.05
Fluoride (total)	potentiometric, ion selective electrode	SM 4500-F B	EPA 340.2	P; 100 mL	none	none required	</= 28 days	0.1-1000	0.5	mg/L	+/- 0.1
Coliform (total)	Most Probable Number (MPN); Membrane Filter (MF)	SM 9221 B (MPN); SM 9222 B (MF)	SM 4500	PA, G; 50 mL	none or 0.0008% $Na_2S_2O_3$	4°C	</= 6 hrs	1-2400	1	CFU/100 mL	+/- 1
E. Coli	Most Probable Number (MPN); Membrane Filter (MF)	SM 9223 B orColilert (MPN); EPA 1603 or mColiBlue-24 (MF); [EPA 1103.1 (MF) MDEQ]	SM 4500	PA, G; 50 mL	none or 0.0008% $Na_2S_2O_3$	4°C	</= 6 hrs	1-2400	1	CFU/100 mL	+/- 1
Potassium (total)	direct aspiration, flame atomic absorbtion	SM 3111 B	EPA 258.1	P, FP, G; 100 mL	not specified	4°C	</= 6 mos	1-20 w/dilution	1	mg/L	+/- 0.1
Color	spectrophotometric	SM 2120 C	EPA 110.3	P, FP, G; 50 mL	none	4°C	</= 48 hrs	1-100	N/A	color units	+/- 1
Ammonia (NH_3-N)	potentiometric, ion selective electrode	SM 4500-NH3 D or E	EPA 350.3	P, FP, G; 500 mL	H_2SO_4 to pH<2	4°C	</= 28 days	0.5-1400	0.5	mg/L	+/- 0.04

APPENDIX A

STORMWATER TEST METHOD SPECIFICATIONS

Laboratory Analytical Tests - WWM/TMDL's/Post-Construction TSS (Grab Sample)											
Parameter	Methodology	EPA 40 CFR 136 Approved Method [a]	Current or Alternate Procedure [b]	Container Type & Size [c]	Chemical Preservative	Holding Temperature °C	Holding Time [d]	Approx. Reporting Range [e]	Approx. Resolution or LRL	Units	Approx. Accuracy
E. Coli	Most Probable Number (MPN); Membrane Filter (MF)	SM 9223 B orColilert (MPN); EPA 1603 or mColiBlue-24 (MF); [EPA 1103.1 (MF) MDEQ]	SM 4500	PA, G; 50 mL	none or 0.0008% Na2S2O3	4°C	</= 6 hrs	1-2400	1	CFU/100 mL	+/- 1
Phosphorous	colorimetric, ascorbic acid	EPA 365.3	EPA 365.3	P, G; 500 mL	H2SO4 to pH<2	4°C	</= 28 days	0.1-1.2	0.1	mg/L	+/- 0.1
Sedimentation/Biota	REFER TO TSS BELOW										
Dissolved Oxygen	electrode	SM 4500 O G	EPA 360.1	A/G; 50 mL (amber bottle)	none; no headspace; store in dark	4°C if transported; test is time / temperature sensitive	ASAP; <15 min	0-20	0.1	mg/L	+/- 0.05
Total Suspended Solids (TSS)	gravimetric, dried at 103-105°C	EPA 160.2	EPA 160.2	P, G; 200 mL	none	4°C	</= 7 days	4-20,000	4	mg/L	+/- 2

Notes:

[a] EPA 40 CFR 136 approved method, including listed EPA method, Standard Method, and/or ASTM method. Or, other MDEQ specified method.

[b] EPA procedure noted as approved for NPDES, but not listed in current 40 CFR 136, and/or laboratory identified equivalent alternative.

[c] P=polyethylene (generally HDPE); FP=fluoropolymer (not normally used due to cost); G=glass; A=amber; PA=autoclavable plastic, polypropylene; Q=quartz.

[d] Holding time specified in EPA guidance or referenced in Standard Method or literature for equivalent method.

[e] Dilution of sample may allow ability to analyze more concentrated samples, refer to test procedures.

[f] "Test Kits", including portable electronic sensors are allowed by MDEQ as noted in NPDES MS4 general permits.

[g] Preservative required only if sample is to be held for later analysis and not analyzed immediately (<15 min) with field test kit.

APPENDIX B

APPENDIX B

INSTRUCTIONS FOR COMPLETING CHAIN OF CUSTODY FORM

Proper information and completion of the Chain of Custody (COC) form is the responsibility of the person(s) conducting the sampling. At the time sample bottles are obtained, field staff shall also obtain a COC form. This form is a legally defensible document that ensures that the sample taken at a specific site is the same sample that is received in the laboratory. It also provides information on the sample condition and integrity as received by the laboratory. The form shall be filled out as neatly, accurately and completely as possible.

Use a separate Chain of Custody form for each individual facility. Multiple stormwater samples collected from the facility on the same day may be listed on one form. Identify grab samples collected for analysis by field test kits on the COC, but do not request laboratory analysis. Results from the field test kits shall be reported on the field inspection form only, not on the Chain of Custody form. Keep COC form in a separate sealed plastic bag to protect it from the elements.

1. **Client information**:

Include Client Name, Site Address, Phone Number, Project Number, Project Name, Client Contact, and Sampler's name. After the samples have been collected, the sampler shall neatly sign his/her name at the bottom right section of the form. Refer to section 6 below for signatures required when relinquishing samples.

a) Client: Arch Environmental Group
b) Address: 37720 Interchange Drive, Farmington Hills, MI 48335
c) Project Number: Refer to school district project number
d) Project Name: School District Name-School Site Name
e) Phone Number: (248) 426-0165 Office Phone or (248) 427-0305 Office FAX
f) Client Contact: All laboratory stormwater test results shall be addressed to Project Coordinator and sent by e-mail to labs@archenvgroup.com
g) Sampler: Printed full name of the person who collected the sample(s)

2. **Sample Information**:

In the middle section of the form, information about each sample should be contained on a separate line item.

a) Sample number: Use the abbreviated outfall code description, following in parenthesis by the type of sample "AAA-XXX (CCC)". Where "AAA" is the 3 letter code for the specific

school building site ID, "XXX" is the 2 or 3 digit code for structure number, and "CCC" is the 2 or 3 letter code for the type of sample. The type of samples are:

- DWS = dry weather screening. Example: NHS-05 (DWS)
- WWM = wet weather monitoring. Example: NHS-05 (WWM)
- RS = resample (where there was a problem with the original samples submitted to the lab or the initial results are suspected. Example: NHS-05 (RS)
- QC = quality control sample. Example: NHS-05 (QC)
- FT = field test sample. Example: NHS-05 (FT)

b) Date: Carefully print the date in the following format MM/DD/YYYY. Example 05/10/2014

c) Matrix: Print "H2O".

d) Comp: Leave blank unless the stormwater sample is a composite sample.

e) Grab: Put an "X" in this box for all grab samples.

f) Sample Description: Use the full outfall/discharge point code description, preceded by the type of sample "CCC @ AAA-XXX-BBB.OF". Where "BBB" is the 2 or 3 letter code for type of structure. Refer to sample codes about, and the following examples:

- Put "DWS @ AAA-XXX.BBB.OF" if the outfall/discharge point sample is from dry weather screening, followed by the round of sampling in parenthesis after description. Example: "DWS @ NHS-05.CB.OF (2nd Round)"
- Put "WWM @ AAA-XXX.BBB.OF" if outfall sample is from wet weather monitoring, followed in parenthesis by sampling purpose. Examples: "WWM @ NHS-05.CB.OF (TMDL) or "WWM @ NHS-05.CB.OF (TSS)
- Put "RS @ AAA-XXX.BBB.OF" if this is a recent re-sample from the same outfall. Example: "RS @ NHS-05.CB.OF". Describe the purpose for the re-sample in the "REMARKS" box. Example: "Resample of DWS @ NHS-05.CB.OF due to expired hold time on original samples".
- Put "QC @ AAA-XXX.BBB.OF" if this is a quality control sample. The QC Officer will notify the field team separately of what type of sample should be submitted to the lab or performed in the field (blank, split, etc.)
- Put "FT @ AAA-XXX.BBB.OF" for grab samples analyzed with field test kits, and on the line below write which parameters were analyzed. For example, "(pH, Temperature, Ammonia, Surfactant)".

g) Number of Containers: Put "X", where X is the number of sample bottles submitted for the analyses described in the next section. The specific number of bottles required for the tests are prepared and provided by the laboratory. For example, the standard dry weather screening (DWS) kit contains 7 bottles. Some of the sample bottles may contain approximately 1 or 2 mL of sulfuric or nitric acid, so extra care should be taken when opening and filling these bottles. Bottles with acid preservatives are marked by the laboratory. Refer to Appendix A for a description of the standard stormwater test procedures, containers, preservatives, and hold times. In order to reduce the number of containers and field sampling time, the laboratory may perform more than one type of test

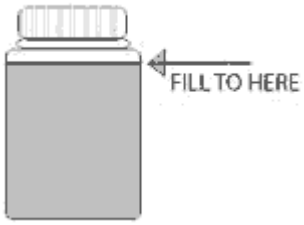
per sample bottle, provided the type of bottle, preservative, sample quantity and other quality considerations are met for each test specification. Refer to section 3 below.

3. **Analyses Desired (Indicate Separate Containers)**:

Bottles should not be rinsed prior to sampling. Bottles with preservatives should not be overfilled. Fill bottles to about the neck level with the exception of the VOA vial. The VOA vial should be filled to the top without headspace. See notes below. Sample bottle lids should be securely closed. Sample bottles should be labeled with the Project Name, Sample Number, and date of collection. Once labeled, the sample bottles should be immediately put on ice in the cooler. The laboratory will issue a unique number to each sample at the time it is logged into the laboratory and any issues with identification, limited sample volume, improper preservation, etc. will be flagged, and the client will be notified as detailed in Appendix C.

a) As noted in 2(g) above, sample bottles are provided from the laboratory with each standard DWS kit. For each container put an "X" on the line and above the "X" write the specific analyses in angled box, as follows:

   i. "SURFACTANTS / FLUORIDE" (amber 1 L glass bottle, no preservatives)
   ii. "AMMONIA" (clear white 500 mL HDPE bottle, labeled "Sulfuric Acid", do not rinse or overfill)
   iii. "E. COLI / COLIFORM" (sterilized and sealed, clear 100 mL polystyrene IDEXX bottle, may contain Na2S2O3 powder)



DO NOT SET THE CAP DOWN OR TOUCH THE INSIDE OF THE CAP OR BOTTLE. FILL THE SAMPLE BOTTLE TO THE MARKED LINE ON SHOULDER WITHOUT RINSING OR OVERFILLING.

   iv. "POTASSIUM" (clear white 100 mL HDPE bottle, labeled "Nitric Acid", do not rinse or overfill)
   v. "COLOR" (clear white 500 mL HDPE bottle, no preservatives)

4. **Turnaround time**:

Indicate the turnaround time needed. The standard is 10 working days – "2 WEEK TAT". More rapid turnaround time may be subject to surcharges. Refer to laboratory contract for current surcharge factors. If turnaround time is critical, and approved by management, then it's important to emphasize that fact to the laboratory person accepting the sample(s). Do not fill in the column marked "LAB #". This is for laboratory use.

5. **Remarks**:

In this section, write "Send results to labs@archenvgroup.com". This section should also be used for:

a) Any special instructions from the sampler to the laboratory, or problems during sampling. Sampler shall put his/her initials next to comment.
b) Upon receiving the cooler with the collected samples, the laboratory shall note the temperature at which the samples were received. Laboratory staff shall put his/her initials next to comment.

6. **Relinquishing Samples and Verifying Chain of Custody:**

Refer to the bottom left portion of the Chain of Custody form. It is necessary to maintain an unbroken, verifiable chain of custody for every sample in the event that analytical results for that sample are questioned. Each time the sample changes hands, the person relinquishing the sample shall note the item number and neatly sign his/her name and company affiliation in the column "Transfers Relinquished by" and record the date and time the sample was transferred. The person receiving the sample shall neatly sign his/her name and company affiliation in the column "Transfers Accepted by". When samples are shipped in a cooler, the shipper should be indicated on the Chain of Custody form and the form should be sealed inside the cooler (inside sealed zip-lock bag, taped to inside lid). The samples must remain cool and be returned to the laboratory as soon as possible (preferably Monday through Thursday). In no case shall samples be delivered to the laboratory later than 24 hours after the samples were collected. As noted above, the laboratory employee receiving the samples shall record the temperature of the samples in the Remarks box.

Samples collected for analysis of the 7 indicator parameters using field test kits should be analyzed ASAP in the field. At a minimum, pH and Temperature must be analyzed immediately in the field. Should field conditions prevent analyzing for Surfactants, Ammonia, Turbidity, and Conductivity then these sample bottles may be transported back to the shop in the cooler and maintained at 4^{o}C for analysis with the field test kits within 24 hours. Sample results (and date) shall be recorded on the field inspection forms.

APPENDIX C

APPENDIX C

LABORATORY SAMPLE ACCEPTANCE POLICY

1.0 Chain of Custody. Laboratory shall provide the client with a standard Chain of Custody form. A client may submit his or her own COC subject to approval. All COC's will be deemed acceptable if the following information is completed and legible:

- 1.0.1 Company name address phone # and fax #
- 1.0.2 Contact name
- 1.0.3 Sampler's or collector's name
- 1.0.4 Project identify and/or location
- 1.0.5 Date and time of sample collection
- 1.0.6 Sample identification, description or location
- 1.0.7 Matrix Type
- 1.0.8 Bottle(s) submitted (type and quantity)
- 1.0.9 If the sample is suspected of containing a dangerous substance
- 1.0.10 Any preservation (Nitric Acid, Hydrochloric Acid et.) which the sample has been treated with
- 1.0.11 Analysis requested
- 1.0.12 For any Bacteria Analysis, Residual Chlorine must be done in the field and noted on the chain of custody, if required
- 1.0.13 Requested Turn Around Time
- 1.0.14 Signatures of the persons involved in the chain of possession including the collector
- 1.0.15 Comments or special instructions
- 1.0.16 Any field notes

1.1 The Laboratory Manager shall review and document the following:

- 1.1.1 Answer the following questions (Refer to Appendix B for instructions on completing the COC)
  - 1.1.1.1 Are the samples submitted with a chain of custody?
  - 1.1.1.2 Is the number of samples the same as stated on the chain of custody?
  - 1.1.1.3 Are the bottle caps tight and in place?
  - 1.1.1.4 Were all the containers intact when received?
  - 1.1.1.5 Were the samples submitted in an ice chest?
  - 1.1.1.6 Were the samples received cold at 4^{o}C?
  - 1.1.1.7 Were the samples within the holding time for the requested analysis?
  - 1.1.1.8 Is the volume of sample submitted sufficient for the requested analysis?
  - 1.1.1.9 Are all samples for air sensitive parameters free of headspace?
- 1.1.2 Ensure the Chain of Custody is completed correctly
- 1.1.3 Note the condition of the sample shipper and bottles upon receipt
- 1.1.4 Preservation type (if any)
- 1.1.5 Ensure that Residual Chlorine was done in the field, if required

1.1.6 For all Liquid Samples, the pH and temperature will be taken and recorded
1.1.7 Temperature of the sample or blank shall be noted on the COC
1.1.7.1 All samples must be received chilled at 4°C (+/- 2°C) with the exception of where chilling would compromise the consistency of the sample. This is determined under the discretion of management.
1.1.7.2 If samples are received above 4°C (>6°C)
1.1.7.2.1 It will be noted on paperwork
1.1.7.2.2 Data qualified
1.1.7.2.3 Client shall be notified to verify that they want the samples run with the qualifier
1.1.8 Date and time of sample receipt
1.1.9 Signatures of persons involved in the Chain of Custody
1.1.10 Samples are accepted when all the conditions are met and the sample(s) deemed acceptable
1.1.10.1 Samples which do not meet all the criteria, but are still deemed acceptable will be data qualified
1.1.10.2 Samples will be deemed acceptable and data qualified upon client's approval.

1.2 For any other questions related to sample acceptance, the Laboratory Manager shall contact the client to resolve any potential issue prior to accepting and/or analyzing the samples.

Appendix "E"

Illicit Discharge Illegal Spill Reporting Form

Created: September 15, 2017
Revision Date: June 27, 2018

District Illicit Discharge/Illegal Dumping Reporting Form
Muskegon Public Schools

Date:_____ Time_____

Inspectors:_____

I. ORIGIN OF REPORT

1. Describe the reason for conducting the investigation.

- ❑ Illicit Discharge Inspection (Routine)
- ❑ Facility Staff
- ❑ Citizen Complaint
- ❑ Other _____

II. SOURCE

1. Describe location of source of discharge (company name, address, cross streets, physical features, etc.)

_____

_____

2. Describe the Source:

- ❑ Residential
- ❑ Transportation Facility
- ❑ Construction Site
- ❑ Custodial
- ❑ Other _____

3. Facility of the Source:_____

_____

III. TYPE

1. Describe the type of material discharged:

- ❑ Sanitary Leak/Spill
- ❑ Paint Discharge
- ❑ Dumpster Discharge
- ❑ Cleaning Discharge
- ❑ Unhardened Cement Discharge
- ❑ Paint Discharge
- ❑ Vehicle Repair
- ❑ Vehicle Washing
- ❑ Grey Water Discharge
- ❑ Landscape Material Dumping
- ❑ Cooling Water Discharge
- ❑ Allowable Discharge
- ❑ Other _____

Provide Additional Information:_____

_____

2. Other Sources:

- ❑ Illicit Connection
- ❑ Construction Site
- ❑ Other _____

IV. FOLLOW-UP AND ENFOREMENT ACTIVITIES

1. Describe Corrective Actions:_____

_____

2. Describe Enforcement Action:

- ❑ None/Incident Resolved
- ❑ Verbal Notice
- ❑ Administrative Action
- ❑ Cleaning Discharge

3. Date Resolved:_____

4. Responsible Party

Signiture:_____